CAST

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Manual for Designing, Implementing, and Evaluating Road Safety Communication Campaigns

EDITORS

Patricia Delhomme, Werner De Dobbeleer,
Sonja Forward, Anabela Simões.

**Campaigns
and Awareness-
Raising Strategies
in Traffic Safety**

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Authors

Patricia Delhomme,	INRETS Institut National de Recherche sur les Transports et leur Sécurité, France
Werner De Dobbeleer,	BIVV/IBSR Belgian Road Safety Institute, Belgium
Sonja Forward,	VTI Swedish Road and Transport Research Institute, Sweden
Anabela Simões,	ISEC (Instituto Superior de Educação e Ciencias) / UNIVERSITAS, Portugal
Giannis Adamos,	UTh University of Thessaly, Greece
Alain Areal,	PRP Prevenção Rodoviária Portuguesa, Portugal
Julien Chappé,	INRETS Institut National de REcherche sur les Transports et leur Sécurité, France
Chloe Eyssartier,	INRETS Institut National de REcherche sur les Transports et leur Sécurité, France
Peter Loukopoulos,	VTI Swedish Road and Transport Research Institute, Sweden
Teti Nathanail,	UTh University of Thessaly, Greece
Suzanne Nordbakke,	TØI Institute of Transport Economics, Norway
Heiko Peters,	BAST Bundesanstalt für Straßenwesen, Germany
Ross Phillips,	TØI Institute of Transport Economics, Norway
Maria Pinto,	INRETS Institut National de REcherche sur les Transports et leur Sécurité, France
Marie-Frédérique Ranucci,	INRETS Institut National de REcherche sur les Transports et leur Sécurité, France
Gian Marco Sardi,	SIPSiVi Road Safety Institute, Italy
Jose Trigoso,	PRP Prevenção Rodoviária Portuguesa, Portugal
Truls Vaa,	TØI Institute of Transport Economics, Norway
Knut Veisten,	TØI Institute of Transport Economics, Norway
Esther Walter,	BFU Swiss Council for Accident Prevention, Switzerland

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Preface: the CAST project

In 2001, 50,000 people were killed on roads in the countries that today make up the European Union. In order to maintain sustainable development within the EU, the European transportation system must be more reliable, safer, and more efficient. In a White Paper[1] on European transport policy published in 2001, the European Commission adopted an ambitious middle-term strategic objective: to reduce the number of EU road fatalities by half before the year 2010. This target means supporting many projects and placing a much higher priority on implementing the most effective measures at the European, national, and local levels.

The White Paper stresses the critical role played by road safety campaigns in attaining this objective. Public-awareness media campaigns are aimed at changing behaviour, either directly, or by providing information that will influence people's knowledge, and/or beliefs and in turn, change their behaviour. The European Commission's goal is to provide powerful and innovative guidelines for designing, implementing, and evaluating better road safety campaigns.

Campaigns and Awareness-Raising Strategies in Traffic Safety (CAST) is a targeted research project supported by the European Commission. It was set up to meet the Commission's need to enhance traffic safety by means of effective road safety campaigns. The CAST project covered the period from 2006 to 2009, and was geared to fulfil the need for tools among campaign practitioners. CAST has developed two such tools to help practitioners design and evaluate road safety campaigns. The design tool (i.e., the present manual) contains detailed guidelines for designing, implementing, and evaluating a road safety communication campaign, based on both existing research and new results produced by the CAST project. The evaluation tool is aimed at helping users conduct the best evaluations, ones that are tailored to the specific characteristics of each road safety campaign and are well-suited to assessing the campaign's effectiveness. With these two tools, practitioners can accurately evaluate their campaigns and also ensure that new campaigns will be planned and executed in a way that will have the optimal impact.

The CAST project was carried out by a consortium of 19 partners and coordinated by the Belgian Road Safety Institute (IBSR-BIVV). It included all of the major European organisations with skills and experience in the area of road safety campaigns, bringing together expertise from throughout the EU.

More information on the CAST project can be found on the CAST website, www.cast-eu.org.

Executive summary

The aim of this manual is to provide a detailed and practical tool that can be used to design, implement and evaluate road safety communication campaigns. It contains both a theoretical background and practical guidelines on how to carry out campaigns at the national and international levels. It is aimed at both researchers and practitioners involved in designing and implementing road safety communication campaigns all over Europe.

Road safety communication campaigns can be defined as purposeful attempts to inform, persuade, or motivate people in view of changing their beliefs and/or behaviour in order to improve road safety as a whole or in a specific, well-defined large audience, typically within a given time period by means of organised communication activities involving specific media channels often combined with interpersonal support and/or other supportive actions such as enforcement, education, legislation, enhancing personal commitment, rewards, etc.[2, 3, 4]

Communication campaigns about road safety have as many as five main goals:
1 – To provide information about new or modified laws.
2 – To improve knowledge and/or awareness of new in-vehicle systems, risks, etc., and the appropriate preventive behaviours.
3 – To change underlying factors known to influence road-user behaviour.
4 – To modify problem behaviours or maintain safety-conscious behaviours.
5 – To decrease the frequency and severity of accidents.

From a pragmatic point of view, an additional explicit or implicit goal can be to inform road users of risky behaviours identified by authorities. In this case, the road safety campaign can serve as a support for road-safety policy making.

This manual is designed to give the reader access to a comprehensive body of information about road safety communication campaigns. It is divided into two parts. The first part, which is the theoretical one provides a background on road safety and communication campaigns; the second, which is more practical presents a step-by-step guide for designing, implementing, and evaluating a road safety communication campaign. If your main interest lies in practical issues, you may want to skip directly to the second part of the manual. Conversely, those who are looking for a theoretical background will see that the first part offers important discussions about human behaviour and how to influence it, which can in turn increase the chances of developing a successful campaign.

Part I: Background on Road Safety and Communication Campaigns

Part I consist of two chapters: Chapter 1 starts with a presentation of road safety statistics on fatalities in Europe. The current statistics show that there are large differences between member states but also that especially age and gender play an important part. This provides a background of a problem that is very often the starting point of

any road safety communication campaign. After this initial overview, the question of why accidents occur is raised. Studies have shown that several factors contribute to road crashes although most of them are caused by human factors. In this manual these human factors are explained in some detail by looking at task performance in general and unsafe acts in particular. An unsafe act that results in a road crash can be described as unintended or intended. An unintended act might be a failure to an oncoming car and an intended one might be speeding or drink driving. The intentional versus unintentional nature of an act has important implications for the development of campaigns.

The manual presents various models explaining the driving task, risk perception, and unsafe acts, both intended and unintended. Road-user behaviour can be subject to both internal variability and external variability. The manual outlines several factors that can account for these variations, some more permanent (e.g., personality) or stable (e.g., attitudes) than others (e.g., distraction).

In order to change behaviour the campaign needs to identify the unsafe behaviour (and sometimes the safe behaviour) and its precursors. First, we present the main determinants of behaviour along with some important theoretical models likely to account for what motivates road users to adopt a safe or unsafe behaviour. Next, we describe how to act on these determinants to eliminate the unsafe behaviour, by examining models of persuasion and the process of change. By outlining the various models the manual helps to identify some critical factors that a practitioner should not ignore.

A communication campaign is not the only intervention that can reduce the number of road crashes. Other supportive activities such as enforcement, education and legislation are often used in combination with communication campaigns. Chapter 2 therefore starts with a discussion of combined actions and integrated programmes. Then, the manual outlines how campaigns try to influence and change social behaviour in order to reduce the number of road crashes which in turn is of benefit for the society in general. The term used in this context is "Social Marketing", which is based on a number of concepts and strategies that are also found in standard product marketing. The manual outlines the differences between standard product marketing and social marketing and presents a scheme for using the social marketing strategy.

To increase the likelihood of success, you can learn what elements make a campaign effective by looking at successful past campaigns or programmes reported in qualitative or quantitative research. Any campaign that does not take the advantage of lessons learnt from the past could pay a high price. In the manual it is stressed that the primary goal should be to draw from accumulated knowledge, regardless of whether previous campaigns had positive effects or not. Two methods used in this context, meta-analysis and descriptive studies, are presented and their advantages and disadvantages are discussed.

A critical factor in effective road safety campaigns is identifying the target audience (primary and secondary audiences), since knowing the audience is a key to running

a fruitful campaign. One common approach discussed in the manual is to divide the target group into different segments, i.e., groups of people who share some key characteristics.

Concerning the campaign's messages, the objective is to develop messages likely to play an important role in behavioural change, by capturing the attention of the targeted individuals and leading them to adopt the safe behaviour. This is obviously not easy and needs careful planning. To start with, the manual presents a detailed overview of what will be said in the message (content strategy) and how and by whom it will be said (execution strategy). For the content strategy, a rational or emotional approach can be chosen. The use of fear appeals has generated a great deal of interest, but its effects are far from clear and unequivocal. The manual presents some evidence both for and against this technique, and concludes that fear appeals can be effective but only in specific situations. The manual also lists a number of important factors that need to be considered before using fear appeals. Then, the message should be pre-tested in order to validate or perhaps modify it. Pre-testing various message combinations allows the campaign planner to assess the feasibility of using the message and its effectiveness in leading the target group to a behaviour change. Several techniques for pre-testing messages are given.

Road safety communication campaigns can rely on various means of communication (selective, interpersonal, and mass media). Each means has its own communicative power, which can be utilized according to how well it aligns with the type of message and the aim of the communication. To choose the most appropriate media, the manual presents a number of factors to consider such as communication types, target audience, media characteristics and costs.

Every road safety campaign should be properly evaluated in order to determine whether it has achieved its objectives and to draw clear conclusions about its effectiveness. The manual describes the three different types of evaluations: process, outcome and economic. A process evaluation takes place during the campaign and is aimed at determining whether the campaign has been properly implemented and is working as it should. An outcome evaluation measures the effects of the campaign ideally by comparing the target group with a comparison group not exposed to the campaign itself. An economic evaluation helps in determining whether the campaign justifies its cost.

Part II: Step-by-step Guide for Designing, Implementing and Evaluating a Road Safety Communication Campaign

Part II gives practical recommendations on how to design, implement, and evaluate a road safety communication campaign. The recommendations are based not only on interviews with practitioners, advertising agencies, and researchers in Europe and elsewhere, but also on a review of the literature and our own experience. This part outlines the six steps needed to complete the entire campaign process:
- Getting started
- Analysing the situation

■ Designing the campaign and the evaluation
■ Conducting the before-period evaluation and implementing the campaign
■ Completing the evaluation and drawing conclusions
■ Writing the final report

Getting started

Before designing the campaign, it is important to determine the nature of the problem and decide if it should be used on its own or in combination with other supportive activities. Hence, the first step consists of identifying the problem based on statistics and database reports. In addition to this, the organisational, socioeconomic, legal, and political contexts in which the problem occurs should be analysed. The second step is to locate and engage potential partners and stakeholders in the campaign, determine how they will interact, and bring them together at a kick-off meeting. Some possible partners and stakeholders are public authorities and private organisations. After this step the campaign budget needs to be decided upon, which must include the cost of the evaluation. Then the creative brief presenting a general overview of the situation should be formulated. The creative brief acts as a link between the partners throughout the various stages of the campaign. Finally, any collaborating outside agencies should be carefully selected.

Analysing the situation

The previous step presented only a general overview of the situation. This next step is more detailed. It starts with an in-depth assessment of the problem and its possible solutions based on synthesized information from four sources: qualitative and quantitative studies, research on theoretical models and mains predictors of the problem behaviour, previous campaigns and other actions, and marketing studies on the target audience. It is common to find that the available data are incomplete at least to fit with the target audience, so it might be necessary to conduct additional research. The data obtained will be useful in deciding on not, on what segments of the population to target and in determining the main predictors of the problem behaviour. At the end of this step and before examining the evaluation methodology (design and variables), the general aim defined at the onset should be converted into specific objectives.

Designing the campaign and the evaluation

After the situation has been analysed, the campaign strategy should be defined. This includes deciding upon the type of campaign (media-based only, combined with other action(s), integrated campaign) and its scale (national, regional, local). The strategy should be based on an overall social-marketing approach and theoretical models of change. When this has been achieved it is time to decide upon the style of the message (i.e., content and execution strategy), as stated in the creative brief. This is followed by the preparation of a media plan, which includes choosing media types, media vehicles (e.g., TV, radio and advertisements), mediators, possible supportive activities, and campaign identifiers (e.g., logo).

When formulating the plan, the campaign budget, its timing and length, advertising costs for each medium, demographic statistics of coverage, media-placement

openings, and so on need to be considered. Once the campaign's message and slogans have been designed, the messages should be pre-tested. Moreover, it is also necessary to pre-test the procedures, activities, and other materials before actually implementing the campaign.

After designing the campaign, attention needs to be turned to how the evaluation should be conducted, whether by an in-house or outside organisation. In this manual three forms of evaluations are suggested: process, outcome and economic. To be able to draw clear conclusions about the outcome of the campaign, an evaluation design should be carried out with at least two measurement periods (before and after), and if possible using a comparison group. The tool used to evaluate the campaign could be a survey or observations, which should also be pre-tested to make sure they measure the right thing.

Conducting the before-period evaluation and implementing the campaign

Once the campaign has been designed and the methods used to evaluate it have been decided upon, it is time for implementing the before-period evaluation. However, before this can be done, some practical aspects of the evaluation need to be considered, including checking the material against the evaluation design and constraints in the field. At the same time, the campaign material should be produced and media time and space should be booked, either in-house or through an outside agency. Producing the material requires several sub-steps: technical briefing, the pre-production and production phases, approval of the produced material by the campaign initiator, and the post-production phase. When this is done the campaign itself can be launched. The campaign's progress should be carefully monitored and quality-controlled so that any problem arising either during the campaign or the evaluation can be handled promptly.

Completing the evaluation and drawing conclusions

In this step, the evaluation measurements scheduled for during and/or after the campaign should be made, including data processing and data analysis. The results of the before-period measurement should be compared to those taken during and/or after the campaign, in order to find out whether the campaign worked and on which dimensions it did or did not have effects. When possible, making at least two after-period evaluations is recommended, shortly after the campaign ends and then after several months to assess any mid-term and long-term effects. The overall results of the evaluation provide clear conclusions about the strengths and weaknesses of the campaign, as well as about its cost-effectiveness.

Writing the final report

The final report ends the campaign process. It justifies the work and money spent on the campaign by the financiers, policymakers, authorities, partners, stakeholders, and the campaign team. The final report should provide an overview of each step carried out in preparing and conducting the campaign and its supportive activities, including essential elements such as the rationale of the campaign, the qualifications of the staff involved in the campaign and evaluation, and the campaign's basic

design, including campaign strategy, how the messages and slogans were developed and the frequency and intensity at which they were presented. It should also state the methods used to evaluate the campaign (according to the process, the outcome and the economic evaluations) and its results. The report should end with a discussion and a final conclusion about the effectiveness and strengths/weaknesses of the campaign. Whatever the effects of the campaign, evaluation reports must be made available in a library and indexed in a valid database of facts and knowledge. An international on-line database that indexes the campaign reports and the quantitative results is useful for communication practitioners and safety researchers hoping to design, implement and evaluate effective and efficient road safety communication campaigns in the future.

Introduction

The aim of this manual is to provide a detailed and practical tool for designing, implementing, and evaluating road safety communication campaigns. It contains both a statistical and theoretical background on road safety and communication campaigns, and a wealth of practical recommendations for conducting campaigns at the local, regional, national, and international scales. It is aimed at decision-makers, practitioners, researchers, students, and any organisation involved in designing and implementing road safety communication campaigns in Europe and abroad.

Why write a manual? To our knowledge, there are very few manuals on road safety communication campaigns[5, 6, 7, 8]. Thus, only limited information is available on how road safety communication campaigns are designed, implemented, and evaluated, and on the best practices to do so. Yet it is important to have a manual specifically focusing on this topic, because such a manual can help individuals involved in road safety campaigns to improve the effectiveness of any future campaigns they conduct.

Governments and authorities at different levels invest a great deal of money and effort in changing the behaviour of road users. Road safety communication campaigns are one of the most important means of persuading road users to adopt safe behaviours. Together with enforcement and road engineering, they constitute a crucial resource. However, how much do we really know about such campaigns, beyond specific national characteristics? Do we really know if the many current efforts are successful? In our minds, the answer is no. Without rigorous evaluation and reporting, it is very difficult to know whether a campaign is successful or not. Evaluations also tell us whether the investment was worthwhile, a fact which in turn may affect future funding.

Our stance in this manual is an optimistic one, for we believe that future road safety communication campaigns can benefit from lessons learned from previous research. Descriptive studies and meta-analyses have shown that campaigns are more likely to succeed if they tackle only one, well-defined theme and select a specific target audience. Moreover, it is essential that the campaign is based on extensive research and relevant theoretical models, which help not only in identifying the main predictors of the problem behaviour but also in designing the campaign message. A social marketing framework should be used to integrate these elements into a broader strategy for influencing road users' behaviour. A major requirement is that practitioners, researchers, and decision-makers will work closely together to make the campaign a success. Each of these actors must be able to step into the shoes of the others.

Whether or not the campaign has positive effects, the results should be published and presented to a large audience by means of a final report. Systematic reporting on past campaigns can provide valuable input for future initiatives. Furthermore, the use of descriptive reviews and meta-analyses, which provide information about several related studies, can help in identifying key elements likely to lay the foundation for future success.

Definition of road safety communication campaigns

Building on existing descriptions of road safety campaigns[2, 3], the CAST consortium adopted a new, general definition:

Purposeful attempts to inform, persuade, and motivate a population (or sub-group of a population) to change its attitudes and/or behaviours to improve road safety, using organised communications involving specific media channels within a given time period, often supplemented by other safety-promoting activities (enforcement, education, legislation, enhancing personal commitment, rewards, etc.)[4].

In this manual, we focus on campaigns that involve more than mass communication. In fact, communication campaigns about road safety can have as many as five main goals:
1 – Provide information about new or modified laws.
2 – Improve knowledge and/or awareness of new in-vehicle systems, risks, etc. and of appropriate preventive behaviours.
3 – Change underlying factors known to influence behaviour.
4 – Modify unsafe behaviour or maintain safety-conscious behaviour.
5 – Decrease the frequency and severity of accidents.

From a pragmatic point of view, an additional implicit or explicit goal can be to inform road users that authorities have identified risky road behaviours and have placed a priority on decreasing them. In this case, the road safety campaign might serve to support the authorities' road-safety policy.

How to use this manual

This manual was designed to offer readers easy access to information about road safety communication campaigns. It is divided into two main parts. The first part is theoretical: it provides a background on road safety and communication campaigns. The second part is more practical: it presents a step-by-step guide for designing, implementing, and evaluating a road safety communication campaign.

Even for those who are more interested in the practical issues covered in the second part of the manual, the first part may be valuable since it presents some important theoretical discussions about human behaviour and how to influence it; gaining these insights may increase the chances of developing a successful campaign.

At the end of each chapter in Parts I and II, the essential elements are summarized. Each section of Part II ends with a set of recommendations to guide you in planning, implementing, and evaluating your campaign. Note that the manual has been written so that readers can go directly to the second part, depending on their needs and knowledge.

Part I presents an in-depth overview of background information that can help you in developing a more effective campaign. It consists of two chapters. Chapter 1 deals with road safety and road-user behaviour in general. After presenting statistics on road accidents in Europe, it discusses the human factors that play an important role in acci-

dents, providing information about task performance and highlighting the distinction between unintentional and intentional behaviour, both of which can be influenced by a road safety communication campaign. This is followed by a presentation of the main theoretical models describing the precursors of road behaviour. Finally, models of persuasion and the process of change are outlined. Chapter 2 discusses road safety communication campaigns in greater detail. It starts by presenting relevant communication types and marketing strategy factors for road safety campaigns and then describes some key elements likely to increase the impact of a campaign. It also discusses the target audience and the most important features of a road safety communication campaign. The chapter ends with an overview of the evaluation process and recommendations for isolating the effects of the campaign itself in cases where it was combined with other programs or initiatives.

Part II offers some practical recommendations on how to design, implement, and evaluate a road safety communication campaign. The recommendations are based on interviews carried out with practitioners, advertising agencies, and researchers in Europe and abroad, and also on a review of the literature and our own experience. This part outlines the six steps needed to complete the entire campaign process:

- Getting started
- Analysing the situation
- Designing the campaign and the evaluation
- Conducting the before-period evaluation and implementing the campaign
- Completing the evaluation and drawing conclusions
- Writing the final report

PART I

Background on Road Safety and Communication Campaigns

Road Safety and Human Behaviour

The road environment involves ongoing interactions between road users and infrastructures, rules, vehicles, and of course, between different road users, including car drivers, passengers, truck and bus drivers, motorcycle and bicycle riders, etc. Driving is a self-regulated activity and the management of these interactions depends on numerous more or less stable factors that are externally or internally determined. In most cases, road users will adapt to the road environment as these factors vary, but they are sometimes unable to adapt successfully and this can cause a road crash [1].

Preventive road-safety measures and programs involve interventions at two levels[9]. The first addresses external conditions of road usage, such as traffic laws, enforcement, and road engineering; the second addresses internal conditions such as the personal motives behind the road-user's actions. Road safety communication campaigns work primarily on this second level.

In this chapter we will explore the main determinants of road-user behaviour in order to learn about what motivates road users to adopt a safe or unsafe behaviour, before defining how to act on these determinants to eliminate the problem behaviour. After relating the main statistics of road accidents in Europe we will present an overview of the principal explanations given for the human factors of road accidents and describe some models of road users' behaviour. We will then outline the main theoretical frameworks that road safety communication campaigns can use to change road-user behaviours.

1.1	**Main characteristics and evolution of traffic fatalities in the European Union**
1.2	**Main causes of road crashes**
1.3	**Models of road users' behaviour**
1.4	**Behavioural change theories**

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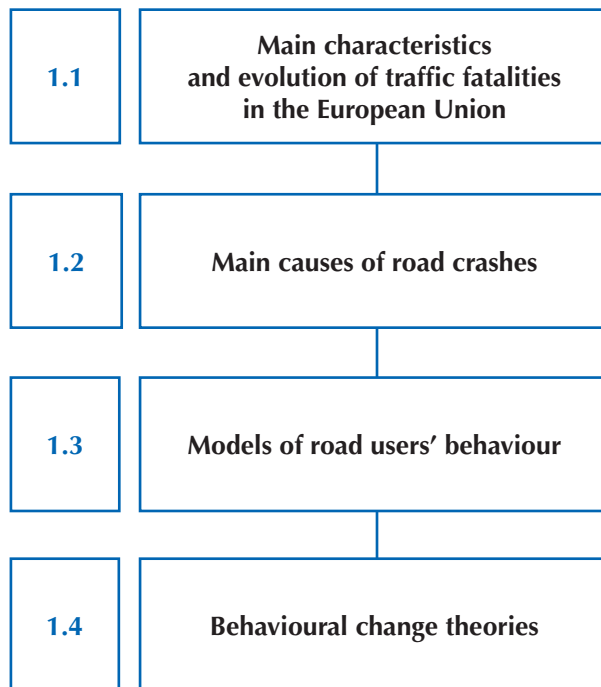
1 The term "road crashes" is being employed more and more often today to refer to road or traffic accidents. The three terms are used synonymously in this manual.

1.1 Main characteristics and evolution of traffic fatalities in the European Union

Road crash statistics are very often a starting point for road safety campaigns. They help identify the most risky behaviours, the types and severity of accidents, the types and characteristics of those road users most involved, as well as when and where accidents occur.

Moreover, to know the potential for improvement (in terms of accident and injury reduction) that might be achieved by addressing a specific type of behaviour, one must know the statistical relationship between that type of behaviour and the accident risk associated with it. Such relationships have been empirically documented for a wide range of behaviours. The most common examples include speeding, driving under the influence of alcohol or drugs, and failure to wear a seatbelt (see Box 1).

Box 1 ■ Potential for improving road safety by addressing behaviour

Speeding

Speed has been found to have a very large effect on road safety, probably larger than any other known risk factor. Because speed at the time of collision is the key determinant of the kinetic energy the human body sustains in a crash, speed is a risk factor for absolutely all injury accidents. The effect of speed is found to be greater for serious-injury accidents and fatal accidents than for minor-injury accidents and property damage. There is a law-like, causal relationship between speed and road safety[10]. The Power Model of speed states that the effects of changes in speed on the number of accidents and the severity of injuries can be estimated by means of a set of power functions. An exponent of 4 is proposed for fatal accidents, an exponent of 3 for accidents involving fatal or serious injury, and an exponent of 2 for all injury accidents, meaning that changes in the speed level can be expected to have the greatest effect upon fatal and serious accidents. It follows that even minor reductions in speed occurring after campaign implementation can have a large effect on accidents involving injuries, especially severe injuries.

Driving under the influence of alcohol or drugs

A recent meta-analysis estimated the risk incurred by drivers under the influence of drugs or medication in general to be 1.58 (hence a 58% increase in accident risk). The figure was 1.96 for presumed drug abuse, and 2.00 for alcohol drinking[11]. When accident risk was related to blood alcohol content (BAC), the

risk function indicated an exponential increase in accident risk as BAC increased, for levels above 0.5 g/dl[12,13]. Driving under the influence of alcohol is estimated to contribute annually to at least 10,000 deaths on European Union (EU) roads. In the EU as a whole, it is estimated that around 2-3% of journeys are associated with an illegal Blood Alcohol Limit (BAC), resulting in 30-40% of driver deaths being connected with alcohol[14,15]. Thus, even a minor reduction in the number of persons driving under the influence of alcohol can be expected to have a large effect on road safety.

Failure to wear a seatbelt

It is estimated that wearing a seatbelt reduces a car occupant's probability of being killed in an accident by 50%[16]. A moderate conclusion is that seatbelt use could prevent 6,000 deaths and 380,000 injuries every year in Europe[17]. According to ETSC estimates, current seatbelt wearing rates in European countries vary between 59% and 96% for front-seat occupants and between 21% and 90% for rear-seat passengers. The wearing rate is the lowest in urban areas.

We will present the main statistics (compiled from www.erso.eu)[18] of road fatalities in Europe **1** and how they have evolved over the past decade.
In 2006, 39.443 people were killed in road crashes throughout the 25 member states of the EU, i.e., 93 deaths per one million inhabitants[18] (see Figure 1). The best rates within the EU were found in Malta (27), The Netherlands (45), Sweden (49), and the United Kingdom (55)[18]. Rates tended to be lower in the north than in the south of Europe, and lower in the west than in the east, which is probably the result of differing histories across nations (see Figure 1)[18]. Countries exhibiting the best rates outside the EU were Iceland (49), Switzerland (51), Norway (52), Japan (52), Israel (59), Australia (77), and Canada (91). The USA had a higher rate of 147[19].

In 2001, the European Commission (EC) set forth the ambitious goal of halving the number of road traffic fatalities by 2010[1]. The European Road Safety Action Programme of 2003 underlined the fact that this target is a "shared responsibility" and can thus only be achieved through the joint effort of all stakeholders[20].

Much progress has been achieved since then. Deaths in the 25 member states (EU-25) were reduced by 21.8% between 2001 and 2006[18]. Traffic fatalities dropped by around one third within the last decade (-30.1%). However, large differences between member states still exist. Figure 2 shows the changes in fatality rates from 1997 to 2006. The largest reduction was achieved in Portugal. Only in Lithuania was there an increase in the last decade.

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1   Depending on the topic, the data presented are limited to only some of the EU member states. This is denoted here by putting the number of member states included in each case, as in EU-14, EU-19 or EU-25 for 14 (BE Belgium, DK Denmark, EL Greece, ES Spain, FR, France, IE Ireland, IT Italy, LU Luxembourg, NL The Netherlands, AT Austria, PT Portugal, FI Finland, SE Sweden, UK United Kingdom) 19 (EU-14 + CZ Czech Republic, EE Estonia, HU Hungary, MT Malta, PL Poland) and 25 states (EU-19 + DE Germany, CY Cyprus, LV Latvia, LT Lithuania, SI Slovenia, SK Slovakia), respectively.

Figure 1 ■ Fatalities in Europe (EU-25) per million inhabitants, 2006
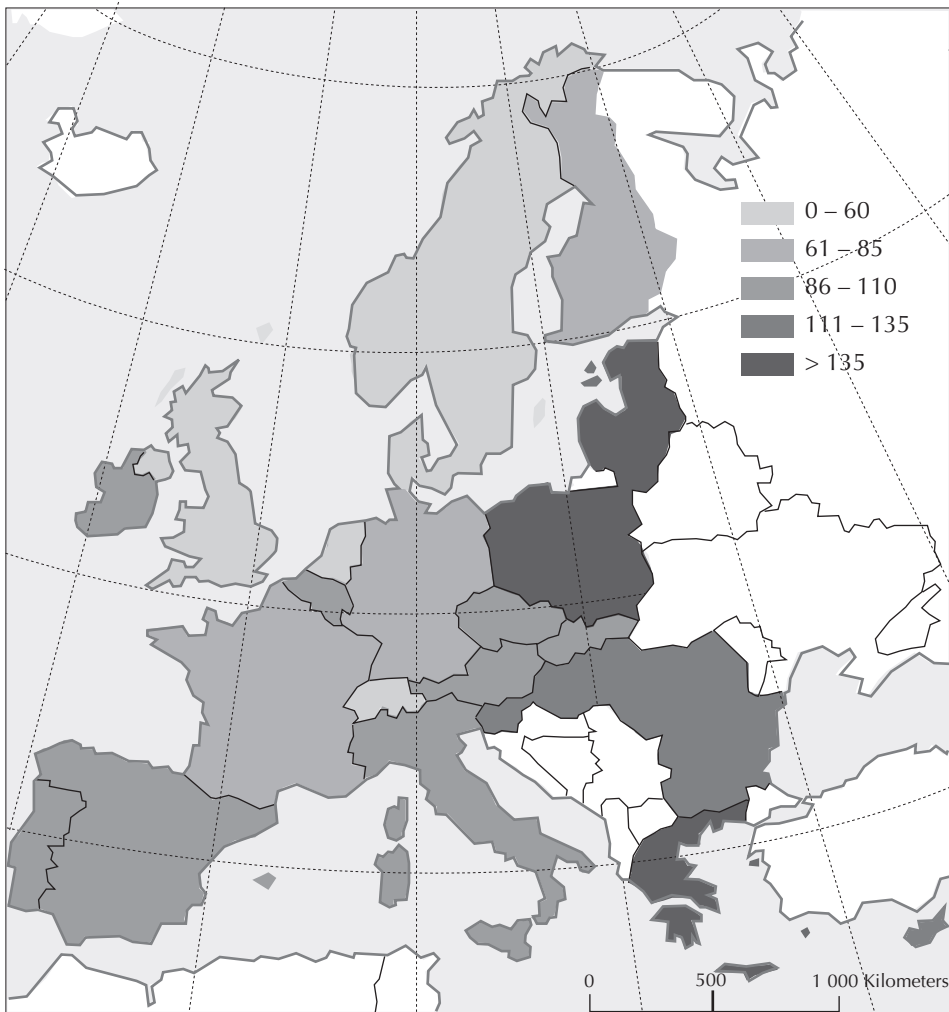
Figure 2 ■ Fatality rate changes, EU-25, 1997 versus 2006
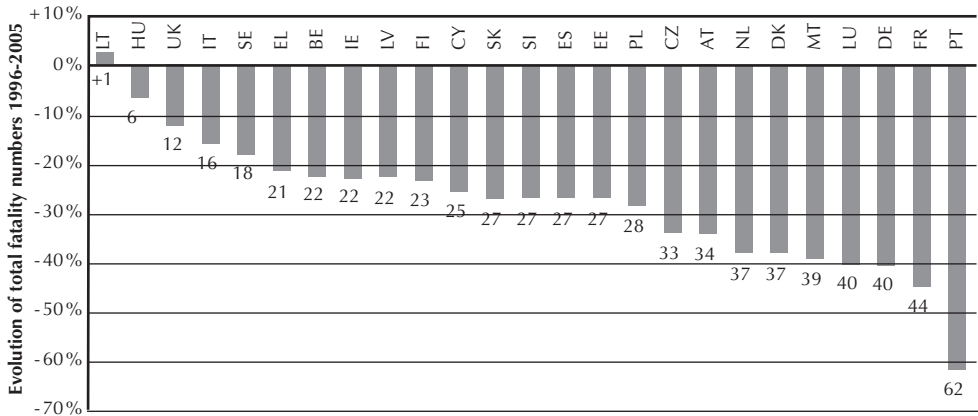
Fatalities by age and gender

The distribution by age group (see Figure 3) has retained basically the same struc-
ture over the last 10 years, with the highest number of deaths for persons between
18 and 35 years of age. The decrease in the number of fatalities was the greatest for
children (ages 0-14) and the elderly (ages 65-74). However the greatest reduction in
the absolute number of fatalities was for the 15 to 24 year olds (-2.683 fatalities).

Figure 3 ■ Fatalities by age group, EU-14, 1997 versus 2006
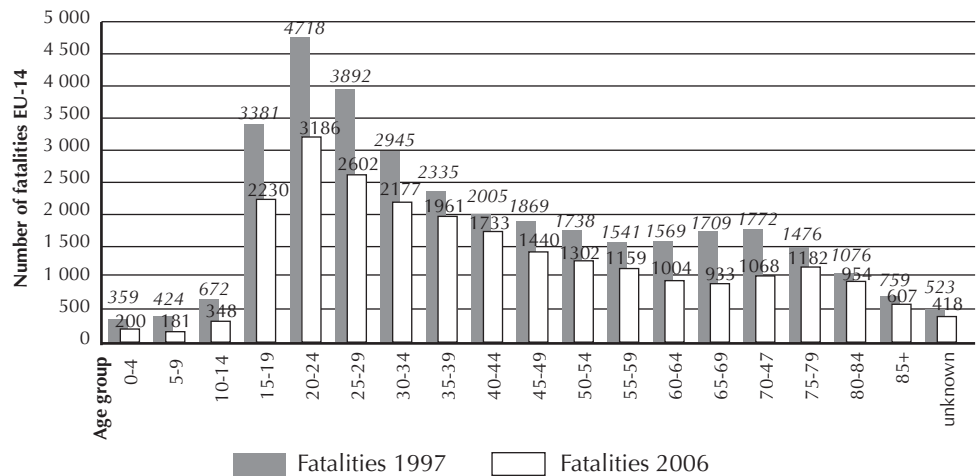
Less than one quarter of all deaths were of females. In the 15-54 age group, about four fifths of the persons killed were males (see Figure 4).

Figure 4 ■ Distribution of fatalities by gender and age group, EU-19, 2006
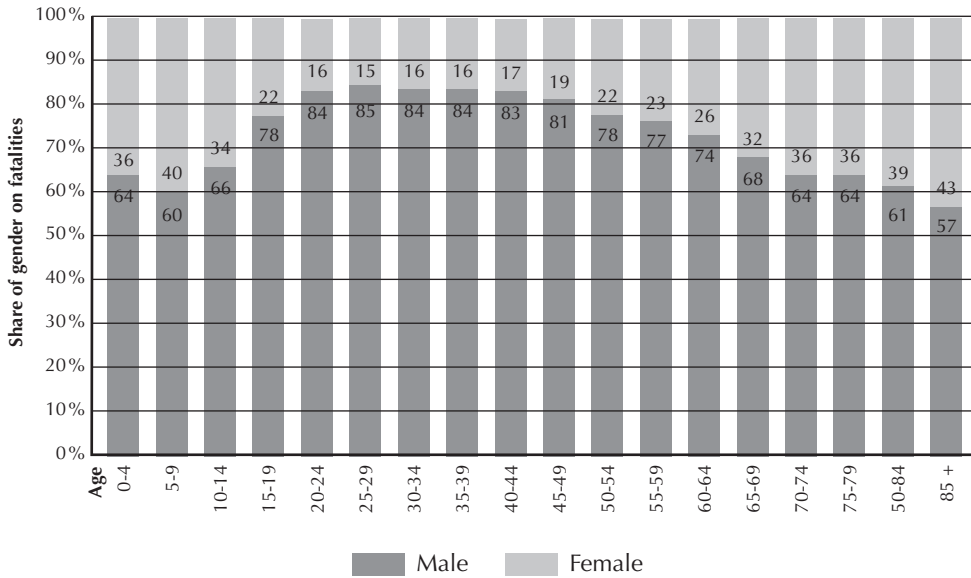
The male and female death rates also differed by type of road user (see Figure 5). While almost two thirds of male fatalities were drivers (58%), less than one third of female fatalities were drivers. The proportion of car passengers killed was higher for females than for males.

Figure 5 ■ Distribution of fatalities by gender and type of road user, EU-19, 2006
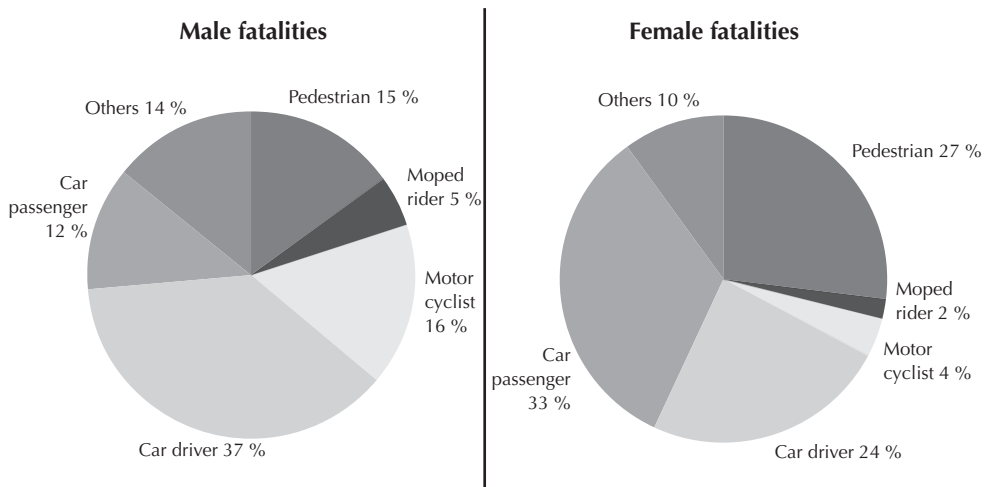
Fatalities by type of road

Only 7% of road-accident fatalities in 2006 were deaths from accidents on motor-ways (see Figure 6). Nearly 60% of the remainder were death from accidents on non-motorway rural roads.

Figure 6 ■ Distribution of fatalities by type of road, EU-19, 2006
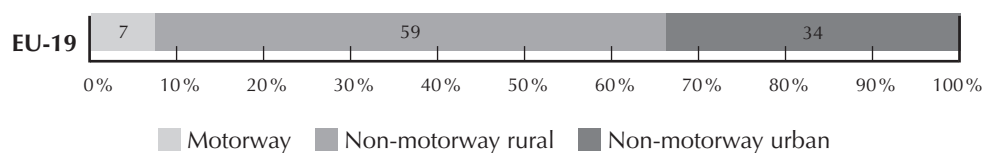
Fatalities by type of road user

Car drivers were the largest road-user group to be affected by traffic-accident fatalities. Together with car passengers they account for 51% of all fatalities *(*see Figure 7).

Figure 7 ■ Fatalities by road user type, EU-19, 2006
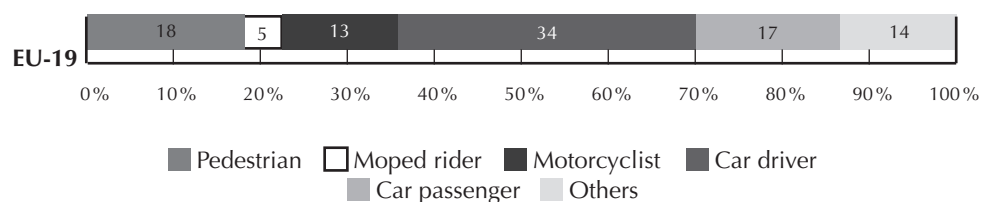
The proportion of fatalities accounted for by each type of road user varied with the kind of road and with the different modes of transportation typically used on each

Figure 8 ■ Fatalities by road-user type and road type, EU-19, 2006

Share of road user type on total fatalities per road type
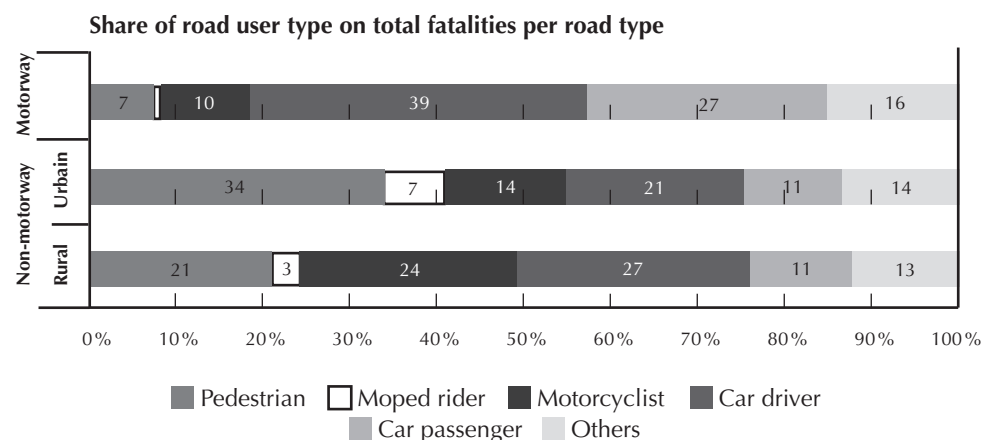
kind (see Figure 8). On motorways, where cars are the prevailing mode, two thirds of all fatalities were car occupants. On urban roads, about one third of the fatalities were pedestrians and another third were car occupants.

In the last decade, fatalities decreased on average by 29% in EU-14. More than 60% of this decline concerned car occupants. However, the largest proportional reductions were for moped and pedestrian fatalities. The fatality rate increased for motorcycles only (+17.3%; see Table 1), which suggests that motorcycle safety measures are a very important topic for the future, as stated in the EC's 2005 Mid-Term Review of the European Road Safety Action Programme[21].

Table 1 ■ Evolution of fatalities by vehicle type, EU-14, 1996-2005

	Car	*Moped*	*Motor cycle*	*Pedal cycle*	*Pedestrian*	*Others*	*Total*
1997	19.069	2.422	3.391	1.779	5.592	2.509	34.753
1998	19.412	2.279	3.418	1.626	5.411	2.406	34.552
1999	19.168	2.201	3.501	1.618	5.663	2.500	34.151
2000	18.896	2.039	3.601	1.481	5.000	2.470	33.486
2001	18.535	1.890	3.811	1.436	4.813	2.397	32.882
2002	17.834	1.647	3.853	1.343	4.868	2.212	31.758
2003	16.076	1.690	3.811	1.275	4.108	2.284	29.243
2004	14.460	1.539	3.945	1.209	3.753	2.013	26.919
2005	13.771	1.449	4.047	1.214	3.683	1.895	26.060
2006	12.611	1.417	3.977	1.188	3.547	1.944	24.684
Total change	*-33.9%*	*-41.5%*	*+17.3%*	*-33.2%*	*-36.6%*	*-22.5%*	*-29%*

Fatalities by month, day of the week, and time of day

The overall distribution of fatalities did not change appreciably between 1997 and 2006. The monthly peak was in the summer months, between June and August. Pedestrian deaths on the other hand, had a different yearly distribution, with the peak in winter. Two possible reasons for this are that pedestrians are more likely to be killed in the dark or in icy conditions (see Figure 9).

Figure 9 ■ Number of fatalities and number of pedestrian fatalities by month, EU-19, 2006

───── Total fatalities   ───── Pedestrian fatalities
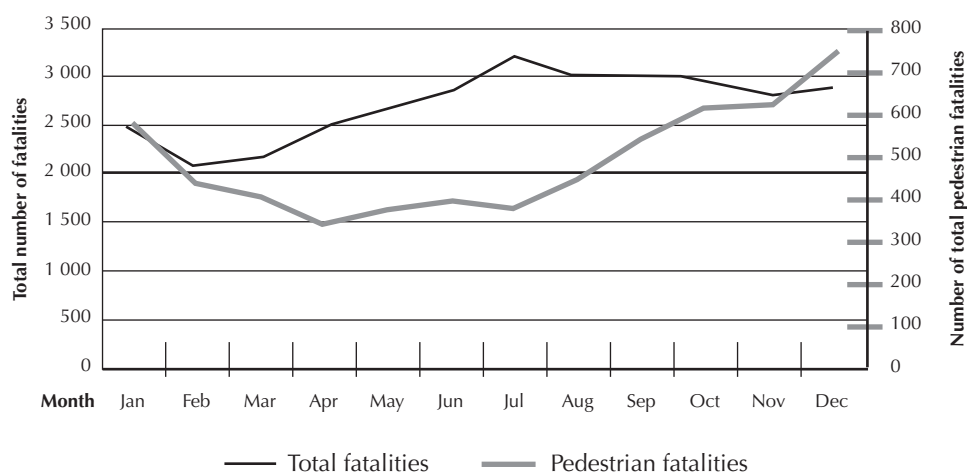
The fatality distribution by time of day is similar from Monday to Thursday, with a daily afternoon peak and fewer fatalities at night (see Figure 10). Also significant is the high number of fatalities during the early morning hours on Saturdays and Sundays. The number of deaths and their time of occurrence on weekends differed from those on weekdays, and in both cases, the number of fatalities was higher in the afternoon and also at night. On average, over 60% of all fatalities occurred between 8 a.m. and 8 p.m.

Figure 10 ■ Fatalities by day of week and time of day, EU-19, 2006
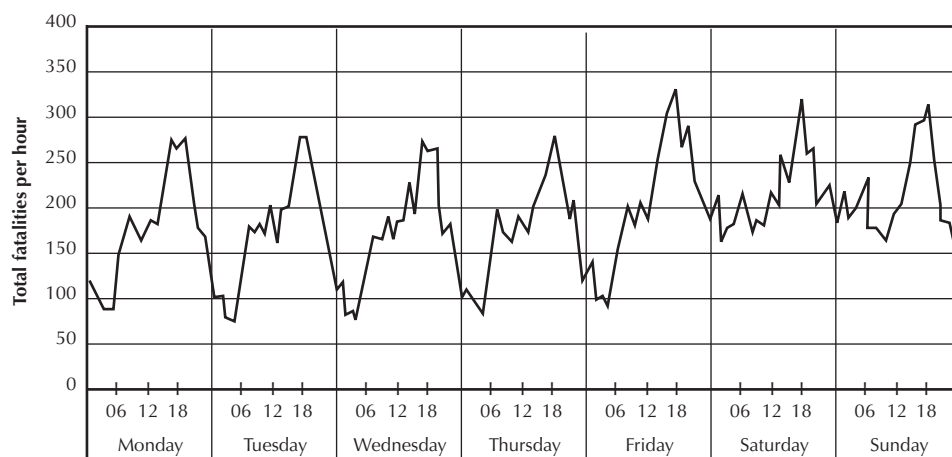
Share of road-crash fatalities in mortality rates

In EU-19, road crashes accounted for 0.96% of all deaths. However, the proportion of fatalities attributable to traffic accidents varied strongly by age (see Figure 11). Road crashes accounted for a large proportion of fatalities for teenagers and people in their twenties and early thirties. There was a peak for 18- to 20-year-olds: over 18% of the deaths in this age range resulted from accidents on the road.

Figure 11 ■ *Percentage of total deaths due to traffic accidents, by age group, EU-19, 2006*
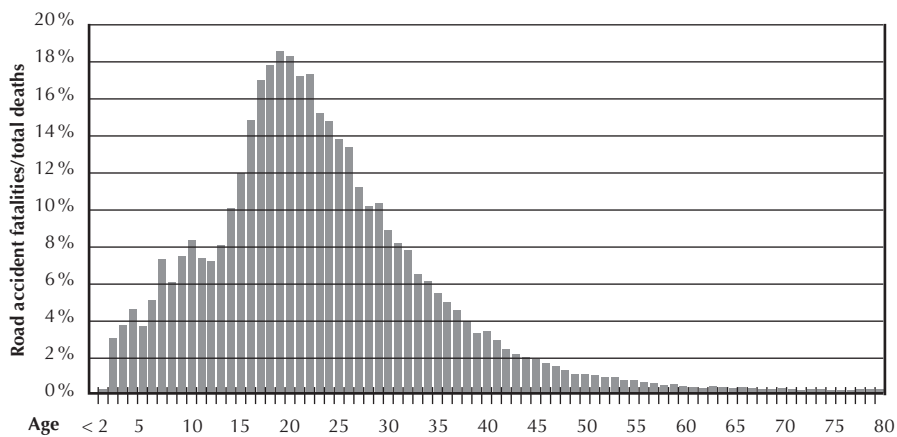
For more information

Detailed and updated statistical data on traffic accidents are published annually by the European Commission in their Annual Statistical Report, which includes a glossary of definitions for all variables used. The Annual Statistical Report, as well as regularly updated Traffic Safety Basic Fact Sheets, are available from the Data Section of the European Road Safety Observatory (ERSO) website, www.erso.eu.

1.2 Main causes of road crashes

Together with "near-miss" accidents or incidents, road crashes can be regarded as unwanted, unplanned disturbances in the road-traffic system. These disturbances have three basic components[22]:

■   **Causal ingredients**, which are latent and, in the context of road safety, can be related to three large groups: the road user (the individual's behaviour, state, and activity, including mood, time pressure, distraction, fatigue, alcohol or drug abuse, etc.), the environment (latent system conditions such as road and traffic conditions), and the vehicle (technical failures).
■   **Timing**, which is the moment at which the causal ingredients come together to break through the existing road-system defences.
■   **Consequences**, which cover a wide variety of phenomena ranging from trivial inconveniences to a disastrous loss of lives or assets.

Although traffic accidents result from various interacting factors, research has demonstrated that most crashes are caused by human factors. According to Sabey and Taylor (1980), human factors are implicated in 96% of road crashes, and 65% can be directly explained by these factors[23] (see Table 2). This is the main reason why road-safety policies try in one way or another to minimize accidents caused by human factors. In order to identify the problem behaviour as well as its origins, it is essential to understand how humans function and perform their tasks. To do so, we need to look at the factors underlying human behaviour. These factors are related to task performance, intended and unintended unsafe acts, and a large number of individual characteristics, some stable, some more transient.

Table 2 ■ *Prime causes of road accidents (from Wierwille et al. 2002[24])*

Cause	% of accidents
Human factors alone	65
Human + road	25
Human + vehicle	5
Road factors alone	2
Vehicle factors alone	2
Human + road + vehicle	1
Total	**100**

Human factors are brought to bear in the design, development, evaluation and operation of systems so that people can operate and maintain them at their optimum performance level. Generally speaking, human factors are considered when designing systems for human use. As such, they have to do with people in their living and working situations, their interactions with systems or with other people, and the procedures and environmental conditions that allow those interactions to take place. Within any system, the human element is the one most able to control the system, for humans are the ones who cope with constraints, adapt their behaviour to external conditions and to their own internal variability, make decisions, learn and acquire new skills with experience, solve problems, create new procedures, and so on.

In the specific context of driving, the human being represents the most flexible, adaptable, and valuable element of the driver-vehicle-environment system, but also the most vulnerable. This vulnerability is due to human variability and instability (human diversity, ageing, health, fatigue, mood, stress, etc.) and behaviour (e.g., speeding, driving under the influence of alcohol or drugs, etc.), which along with some external factors and organisational constraints, can influence driving performance.

Human control in driving performance

Task performance in general

When performing a task, people control their actions through various combinations of two control modes: the conscious mode and the automatic mode[25]. The conscious mode is slow, sequential, and logical, but it has a limited capacity because it is used to pay attention to things. The automatic mode is unconscious, which means that when individuals perform an automated task, they are aware of its progression but not of the process controlling the sequence of actions. This mode is very fast and allows a person to carry out different actions in parallel. According to Rasmussen's cognitive-control model of task performance[25], these two control modes work in conjunction with each other, and three levels of performance can be described that depend on the person's knowledge of the environment, interpretation of available information, and experience in performing the task:

- *Skill-based* **(SB)** behaviour is found when routine, frequently occurring tasks are performed in an automated mode, with occasional conscious control over progress.
- *Rule-based* **(RB)** behaviour occurs when an automated task is being performed and the need to modify the programmed behaviour arises due to a situational change. At this point, there is a switch from the automated mode to the conscious mode in order to apply previously learned rules or procedures. This is a mixed control mode.
- *Knowledge-based* **(KB)** behaviour takes place when an individual repeatedly fails to find a pre-existing stored solution while performing a task. He has to use his knowledge and higher abilities, then, to solve the problem, understand the new situation, and make a suitable decision.

These three levels of task performance can coexist, which is obviously what happens during driving: speed and direction are controlled at the *skill-based* level, whilst inter-actions with other drivers and pedestrians are carried out at the *rule-based* level. At the same time, a problem may occur that requires solving at the *knowledge-based* level. Although the *skill-based* and *rule-based* levels are faster, less effortful, and almost unlimited in capacity, the resources available to the individual for processing information when solving a particular problem or performing an additional task (*knowledge-based* level) can become saturated. Information processing will then simultaneously involve all three control modes, which creates a mental overload and can lead to a critical situation. This hierarchical control structure is useful in explaining the typical categories of human error, which are seen as mismatches in human-machine interactions occurring in a dynamic environment (see Figure 12).

Figure 12 ■ *Three levels of task performance: the Rasmussen model*[26]

Situations	Control Modes		
	Conscious	**Mixed**	**Automatic**
Routine tasks ↑	Risk of disruption due to the use of conscious control in performing highly routine tasks e.g., Early stages of skill acquisition		**Skill-based** Automatic control of routine tasks with occasional check on progress
Trained-for-problems ↓		**Rule-based** Pattern-matching prepared rules or solutions to trained-for-problems	Risk of disruption due to the use of automatic responses to situations requiring careful thought
Novel problems	**Knowledge-based** Conscious, slow, effortful attempts to solve new problems "on line"		e.g., Fast and inappropriate reactions to a hazard following distraction or inattention (panic)

The driving task

Driving a vehicle is a complex task performed in a dynamic environment where different interactions occur. Information must be processed continuously in order to ensure proper and timely decision-making. Driving is a self-regulated activity in which drivers make more or less conscious choices and decisions that depend upon both the driving situation to be managed and their own driving abilities, which they evaluate both as they drive and afterwards. Their regulatory actions will depend on

knowledge acquired through driving experience but also on transient factors that can lead to substantial motivational and emotional variations[27,28,29].

Despite the complexity of the task, drivers often engage in additional tasks while driving, such as talking to passengers, listening to the radio, or making a phone call. Any activity that distracts drivers and draws their attention away from the main task (driving) is liable to lower driving performance and have serious consequences for road safety.

Michon proposed a hierarchical model of the driving task[30] that has some correspondence with Rasmussen's model of the cognitive control of task performance. Michon's model describes three levels of task performance:

- A *strategic* level consisting of route planning according to defined goals, such as saving time or avoiding traffic jams.
- A *tactical* level involving manoeuvres related to social interactions in the driving environment: overtaking or negotiating at intersections.
- An *operational* level consisting of acting upon the vehicle's controls: changing gears, braking, steering, etc.

Given that this model is hierarchical, the existence of top-down control is assumed, which means that decisions made at upper levels control behaviour at lower levels. The model also allows for bottom-up control, which means that traffic conditions can trigger changes in tactical or strategic choices.

When a person is starting to learn to drive, all actions represent a problem to solve, so performing them is based on recently acquired knowledge and procedures given by the driving instructor, i.e., they require procedural knowledge and the corresponding decision-making takes more time. With training and practice, the actions performed at the operational level become automated or *skill-based* (using the terminology of Rasmussen's control model) and very rapid. However, any unexpected or novel situation that comes up will disrupt the automatic behaviour, even in an experienced driver, and this requires a higher level of control.

According to Summala (in Cnossen, 2000)[31], the uncertainty created by these situations or by mental overload can cause a shift from automatic to controlled processing. In the case of driving, a sign that triggers a particular action in the driving context will not trigger the same action in a different context. This means that the links between environmental cues and their associated responses during driving are goal-dependent and under cognitive control. For an experienced driver, decisions made at the tactical level are essentially based on already learned traffic laws that must be followed during driving and on the infrastructure and changes in traffic. In other words, they are *rule-based*. At the strategic level, decisions are made on the basis of mental representations of the environment or procedural knowledge, since they are *knowledge-based*. At this level, navigation systems can be helpful, particularly when the person is driving in an unfamiliar environment or is trying to find an alternative route.

The hierarchical structure of the driving task and its control levels explain why drivers think they are able to simultaneously carry out additional tasks not directly related to the driving itself, such as talking to a passenger, making or receiving a phone call, operating the radio, smoking, etc. However, the unexpected presence of a hazard or a complex driving situation will require a higher behavioural-control level, which will increase the driver's mental workload and reduce his/her cognitive availability for processing any additional information. The safe management of the driving task therefore requires balancing the driver's awareness of the task's demands with his/her internal resources so that the task can be performed according to the predefined goals.

Unsafe acts: unintended and intended

A fault or failure by the driver is frequently seen as the immediate cause of an accident. However, faults and failures are the consequence of several interacting factors, for the human action (unsafe act) that caused the accident is at the end of a chain of factors leading to the critical situation. As Figure 13 shows, unsafe acts can be divided into unintended and intended actions. Unintended actions are further divided into slips, lapses, and mistakes. Intended unsafe acts include violations and some intentional mistakes.

Figure 13 ■ Taxonomy of unsafe acts (Reason, 1990)[32]
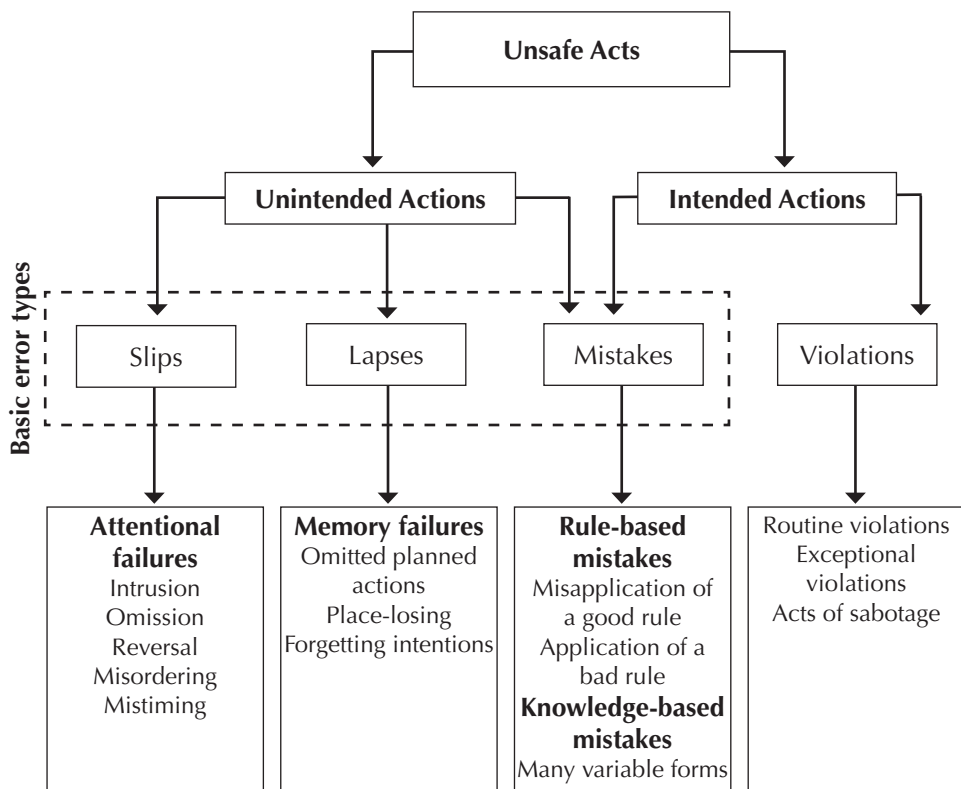
According to this model, *slips* are execution errors or performance errors resulting from inattention (appropriate intention followed by incorrect execution, e.g., a driver who plans to step on the brakes to slow down and inadvertently steps on the accelerator); the intention was correct, but the execution of the required action was incorrect (here, stepping on the accelerator instead of the brakes). Excessive attention on the part of a novice driver can lead to mental overload, which could result in a slip (wrong action despite right intention). *Lapses* are memory failures that lead to forgetting to perform a planned action or carrying out the task's steps in the wrong order (failure to perform an intended action or forgetting the next action in a sequence, e.g., turning on the lights instead of a signal). *Mistakes* occur when there is misapplication of rules or when the wrong rules are applied to achieve a specific goal. For instance, a mistake can be caused by the driver's inability to judge the situation properly (e.g., misjudging the speed of another car and deciding to move out into the intersection). Mistakes are subdivided into *rule-based* and *knowledge-based*. *Rule-based* mistakes can either be misapplications of the right rule (i.e., slamming on the brakes when approaching a roundabout instead of braking gradually, which could surprise the driver in the vehicle behind) or applications of the wrong rule (i.e., opening the window when feeling sleepy rather than stopping and taking a short nap). *Knowledge-based* mistakes are described as deficiencies or failures in the judgmental and/or inferential processes involved in selecting an objective or in determining the means of achieving it, irrespective of whether the actions are in keeping with the plan.

Combining this classification with Rasmussen's cognitive-control model of human activity, we obtain three categories of *errors*: *skill-based* errors (slips and lapses), *rule-based* errors (mistakes), and *knowledge-based* errors (mistakes)[25]. Both rule-based and knowledge-based mistakes can be viewed also as intentional unsafe acts as they are consciously committed resulting from a mismatch between the intention and the expected effect (e.g., although being aware of the risks and the inadequacy of the intended action, the actor performs it once he/she is used to do so and enjoys taking risks or is confident on his/her abilities or is usually in a high rush). This is different from a violation because no rule has been broken; just a wrong decision has been made based on risky routine practice.

According to Reason (1990)[32], intended unsafe acts can also be violations. *Violations* occur when there is intentional disregard for context-specific rules and regulations, which leads to conflicting situations with other road users or the environment. They can be defined as any behaviour that deviates from accepted procedures, standards, and rules. Based on their aetiology[33], violations are classified into two categories: routine (common behaviours tolerated by the system) and exceptional (infrequent, unacceptable deviations from established rules). Routine violations can also be described as "common practices" that occur with such regularity that they become almost automatic (e.g., driving at 100 km/h in a 90 km/h zone). Insofar as these behaviours are identified as routine violations, the person responsible for them is not likely to perceive them as risky – indeed, when drivers commit such violations they think it is "safe" to do so. Exceptional violations are rare and tend to happen only in very unusual circumstances like emergencies or during recovery from an equipment failure. In the context of vehicle driving, some exceptional violations are triggered

by time pressure, environmental conditions, or a lack of supervision. Later studies have demonstrated that some violations are the consequence of angry and hostile feelings[34]. Here, chasing another driver is given as an example of an "aggressive violation", whereas speeding in a residential area is described as a "highway code violation", which is similar to what are called "routine violations" above. Aggressive violations are motivated by affect, as an outlet for emotions, whereas routine violations are motivated by instrumental considerations such as saving time.

Regarding road safety campaigns, the campaign message needs to be geared to the kind of behaviour one is trying to change. For instance, if the focus is on slips and lapses, then the message might inform people of the problem and perhaps encourage drivers to practice more. If the problem is the result of mistakes, then the focus could be on making drivers aware of the situations most likely to result in misjudgements, and, as in the case of slips and lapses, further training might be stressed. Violations, on the other hand, are very different from slips and lapses, since they are deliberate and can be understood in terms of social and motivational factors like the person's attitudes and norms. In this case, driver training can further exacerbate the problem by increasing the feeling of control. To reduce the number of violations, the message needs to focus on the motivation underlying unsafe driving practices: this is what needs to be challenged and changed.

Variability of road users

No two people are the same; certainly this also holds true for road users. To start with, road users can be drivers, motorcycle and bicycle riders, passengers, or pedestrians, depending on the situation. They can use different modes of transportation, have different skills and motivations, and differ in terms of individual characteristics and lifestyle.

Moreover, each road user is subject to *internal variability* due to transient factors such as variations in health; state of fatigue; consumption of alcohol, drugs, or medication; influence of mood, rush, stress, or aggressiveness; and so on. Also, cognitive-motivational aspects such as perceptions of oneself and other road users, the tendency to take or avoid risks, and the desire to imitate other road users' behaviour all play an important part in internal variability.

Because road users differ so much from each other and are also subject to internal variability, they may not exhibit the same behaviour even if the circumstances are exactly the same. In this section, we will discuss some factors that affect how people behave on the road. Some of these factors can be regarded as more or less stable, others as more subject to change.

Road users' age, sex, and experience

Age and sex

As discussed earlier, the risk of involvement in a crash seems to depend upon the driver's age. Young (18 to 25) and elderly (65+) people are the two groups most at risk. However, with regard to accident causation, it seems that young drivers are more likely to commit violations, and the elderly to be more prone to slips and

lapses. Studies comparing young and old drivers have found that younger drivers are more likely to underestimate their own risks, overestimate their own driving skills, disobey traffic laws, and believe that their violations are socially acceptable[35,36]. Attitudes towards violations have also been found to be more positive in studies demonstrating that young drivers are more likely than older ones to believe that violations will result in positive consequences.

In discussions about young drivers, it is necessary to point out that the above findings usually apply to young men rather than young women. Young men report more aggressive violations than women[34], are more optimistic[37], and feel more invulnerable than female drivers[38]. However, one mistake often made in traffic safety campaigns is to treat young men as a homogeneous group of risk takers. The consequences of this could be that for this group, risky behaviour becomes the norm rather than the exception.

Experience

Experience is particularly relevant for drivers and riders of two-wheeled vehicles. Actually, the fact of having more driving experience can lead to optimisation of driver behaviour, meaning that the behaviour will become more consistent, more accurate, more rapidly performed, less effortful, and more automatic. Moreover, experience leads older drivers to compensate for age-related decreases in functional capacities, which can improve their chances of correcting errors, provided enough time is available. On the other hand, experience can also lead to more violations. Despite the fact that the number of road crashes is large, the chances of a given individual being involved are rather small. Thus, even reckless driving can often be carried out without causing a road crash, and it is day-to-day experience that affects driver behaviour. Studies have also found that driving experience is linked to driving skills[39]. It seems that drivers who commit violations believe they are skilful enough to prevent their involvement in an accident, a behaviour described above as a *routine violation*. In addition, women generally use a car less than men; this is something that might account for the differences between men's and women's intentions to violate on a regular basis. In studies where this factor was controlled for, no difference was found between the groups except for the youngest drivers, among whom men were more likely to break the law than women[40].

Motivational, affective and cognitive characteristics

As described above, a road users' internal state can play a crucial role in his/her behaviour. Some key factors that affect this state are closely linked to the risk of road crashes. More specifically, motivational factors can have a strong influence on a road user's inner state and risk of being involved in an accident. Such factors determine what drivers do with their skills[41]. Some of them are relatively stable, such as personality-related factors (sensation-seeking, aggressiveness, etc.), others such as attitudes are less stable, and still others are transient and linked to motivation (mood, stress, anger). Other examples of transient factors are ones related to driving fitness (fatigue, drowsiness, health condition, consumption of alcohol and drugs, etc.), which may in turn be related to motivational factors. In all cases, these factors can influence what decisions are made in various traffic situations[42,43].

Personality traits

Personality can be defined as "the totality of qualities and traits, as of character or behaviour that are peculiar to a specific person"[44]. Personality is believed to be relatively stable, something that does not fluctuate from one situation to another. For instance, a person might be described as introverted; if this is linked to that person's personality it is assumed he/she will behave in this way regardless of the situation.

Anger and aggression

Anger and aggressive behaviour may or may not be part of a person's personality. Anger can be defined as an emotional state that varies in frequency, intensity, and duration. It can be experienced as anything from mild irritation to intense fury and rage. Anger may or may not be linked to aggression, and it is therefore important to differentiate between angry feelings and the manner in which anger is expressed[45].

In recent years, the amount of aggressive driving seems to have increased. Underwood, Chapman, Wright, and Crundall[46], for instance, reported that 85% of the participants in their study had behaved aggressively whilst driving. Another term used is "road rage", which might be misleading since it has become an umbrella term encompassing both criminal actions on the road and some milder forms of frustration that cause people to beep the horn or gesticulate[47]. It has therefore been suggested that the term "road rage" should be used solely to refer to criminal actions of assault on the road, and that it should be distinguished from other forms of aggressive behaviour.

Not surprisingly, studies have found a relationship between aggressiveness and accident involvement[48,49]. Furthermore, driving violations, another factor related to accidents[50], have also been shown to be linked to aggressiveness[51]. Elliot[47] argued that aggressive driving is often a consequence of careless or risky driving by another driver. He goes on to say that the "victim frequently precipitates the initial event which causes anger in the perpetrator, and retaliation by the victim leads to escalation of the conflict and eventually to assault".

For instance, drivers who rank high in trait-anger (trait-anger refers to a personality characteristic that predisposes an individual to experience anger more frequently and more strongly) become intensely angry more often and *engage in more aggressive and risky behaviours* (e.g., violations, mainly *speeding or reckless driving), and have more accidents than t*hose low in trait-anger[52,53].

Sensation-seeking

Zuckerman defined sensation-seeking as "a trait characterized by the *seeking* of varied, novel, complex, and *intense* sensations and experiences, and the willingness to take physical, social, *legal*, and *financial* risks for the sake of such experience." (1994, p. 27)[54]. Four different types of sensation-seekers have been identified: thrill-seekers, experience-seekers, boredom-susceptible and disinhibited individuals (for a review see Zuckerman)[54]. Sensation-seeking has also been linked to risky driving; in a review of the literature Jonah[55] concluded that sensation-seeking explained 10-15% of risky driving behaviours[56]. Thrill-

seekers who seek adventures rated speeding as more exciting than those who scored low on the same scale. Thrill-seeking has also been linked to risky driving habits[57] and high involvement in road crashes[58].

Attitudes

Attitudes typically refer to internal states that predispose an individual to respond either favourably or unfavourably to an object. They are different from personality since they are less stable and therefore more amenable to change. Attitudes have been linked in several studies to traffic violations (for more details about attitudes and behaviour, see pp. 59-60). In one study, speeding, for instance, which is a fairly common offence, was not perceived as very serious[59]. In that study, the chance of surviving a road crash was greatly overestimated and drivers argued that traffic conditions often made speeding necessary. Results have also shown that attitudes toward seat belts are strongly related to actual usage[60,61]. People usually know that seat belts are effective, but the reason for not wearing them is that they cannot be bothered[62] or find them inconvenient and/or uncomfortable[63]. Drinking and driving is generally considered to be a serious offence. In recent years, the connection between alcoholism and driving while intoxicated has been demonstrated in several studies showing that alcoholism is a frequent reason why both men and women drink and drive[64]. Despite this, studies have still found a connection between drunk driving and attitudes. Results from an in-depth study in which a group of drivers charged with a blood-alcohol level (BAC) over 1.0 g/l were interviewed showed that most of these drivers did not feel they had been noticeably drunk and that in general, they felt their risk of being involved in a car accident was very small. Moreover, the majority interviewed in that study did not think that alcohol made them poorer drivers[65].

Transient factors

Motivations and mood

Events that can temporarily modify the internal human state (mood, stress, emotion) can be regarded as transient factors. For instance, passing an exam can induce a positive mood; conversely, having a family problem can induce a negative mood. However, moods are not always caused by events that are extrinsic to the driving task. They can also be intrinsic, for instance, if a driver refuses to yield the right of way, tailgates the vehicle ahead, or cuts in front of another driver, this can create negative feelings and/or anger. Such a change of mood can have an impact on information processing, especially on the executive control of attention[66], because people are likely to start paying more attention to their personal situation (problem or success) than to the driving environment, and this can lead them to make risky decisions.

Driver attention

One of the causes of an unsafe act may be a driver's lack of attention. Attention is based on selective cognitive processing involving focusing or concentrating on one area of thought in order to deal with it effectively[67]. "*When drivers attempt to attend to more than one stimulus at a time, their attention becomes divided; and if a secondary task is difficult or demanding, they may become distracted from the primary task*"[68] (Stevens, Kimby, Board, Kerlsoot, and Burns, 2002, p 36).

Attention can also be defined as a cognitive state with two dimensions: selectivity, referring to the selection of relevant stimuli coming in through our senses, and intensity, which corresponds to the level of alertness[69].

As previously mentioned, the characteristics of the driving task generate ongoing information-processing demands in a dynamic decision-making environment, and also require interacting with other road users so as to enable appropriate and timely decisions and fulfil the purpose of the trip in a safe and efficient manner. Therefore, attention represents the cognitive function that is most needed in driving. Below, we will present situation awareness, distraction, and inattention as different aspects of attention.

Situation awareness

Situation awareness is defined as the result of perceiving the elements in the environment within a volume of time and space, understanding their meaning, and projecting their state into the near future[70]. Situation awareness plays a vital role in driving, as in every dynamic decision-making environment. An explanation of inappropriate driver behaviour should be sought at each of the different levels of situation awareness:

■ Level 1. Perception of the elements in the current situation: on a practical level, this means that the driver looks at and perceives basic information.
■ Level 2. Comprehension of the current situation: the driver thinks about and understands the meaning of that information.
■ Level 3. Projection of future state: the driver uses that meaning to anticipate what will happen within that time and space.

Distraction and inattention

Driver distraction is part of the broader category of driver inattention. Distracted driving occurs "when a driver is delayed in the recognition of information needed to safely accomplish the driving task because some event, activity, object or person compelled or tended to induce the driver shifting attention away from the driving task"[71].

The result of distraction is inattentive driving, but inattention is not always caused by distraction. Four types of distraction can be listed: visual, cognitive, biomechanical, and auditory, depending on the specific impact of the distraction on the driver. Numerous events and activities both inside and outside the vehicle can distract a driver, including how much attention he/she is paying to the driving, which may cause him/her to miss or delay the recognition of, or reaction to, a critical event in the environment. This can result in a collision.

A comparison of the definitions available in the literature suggests that a comprehensive definition of driver distraction must take into account the following key components[71]:

■ The difference between distraction and inattention (unlike inattention, distraction is triggered by a specific event or activity).
■ The recognition that the distraction can come from inside or outside the vehicle.

■ The categorisation of distraction into these four types (according to the impact).

■ The effect of distraction on the driving task.

There are many factors that contribute to distraction, not only in the road environment but inside the vehicle as well. The danger of distraction lies in its ability to potentially cause the driver to miss, or be delayed in responding to, critical events in the driving situation[72]. The extent of the resulting performance decline appears to be related to the increased difficulty of the cognitive task resulting from an additional task to driving and also from the complexity of the driving situation. In-vehicle information and communication systems such as mobile phones have an impact on driver attention. The diverse systems available to drivers may lead to an increase in accidents caused by driver distraction.

Fatigue and drowsiness

Many studies indicate that driver fatigue and drowsiness are important factors that increase the risk of being in a crash. A model of fatigue based on the perceptual-motor abilities involved in task performance over prolonged periods[73] makes a distinction between active and passive fatigue. Active fatigue results from continuous and prolonged task-related perceptual-motor adjustment. Due to this type of adjustment, active fatigue can occur in driving, particularly in complex driving environments with high attentional demands. Passive fatigue, in contrast, occurs in cases where the person appears to be doing nothing for long periods, like driving long distances, particularly in monotonous situations and at night. Both driving for prolonged periods in monotonous situations and driving in a complex environment cause fatigue. However, only passive fatigue leads to drowsiness, since the low attentional demands decrease the level of vigilance.

There are many underlying causes of fatigue and drowsy driving, including: sleep loss due to restriction, occasional sleep deprivation, or interrupted or fragmented sleep; chronic lack of sleep; circadian factors associated with driving-time patterns or work schedules; undiagnosed or untreated sleep disorders; lengthy amounts of time spent on a task; the use of sedating medication; and the consumption of alcohol when already tired. These factors have cumulative effects, so a combination of any of them can greatly increase one's risk of a fatigue-related crash.

The effects of drowsy driving tend to be underestimated by drivers and under-reported in crash data. The best way to prevent drowsy driving is to be attentive to the signs of fatigue and to rest or nap in order to recover the necessary level of vigilance. No other countermeasures or strategies are supported by scientific literature. Thus, drivers must be educated to recognize the symptoms of drowsiness and the necessity of taking a break from driving[74,75]. Driver fatigue and drowsy driving have effects similar to those of alcohol consumption[74,76,77,78,79]. In fact, fatigue and sleepiness slow down reaction time, decrease awareness, impair judgment, and raise the risk of having a crash.

Health condition

People's health condition seems to affect their behaviour on the road, because it can influence how strongly and how fast they react in difficult driving conditions.

Furthermore, there are a number of prescribed drugs that can adversely affect driving skills. The use of tranquillisers and sedatives severely impedes driving performance, since they lengthen reaction time and lower awareness of hazards[80].

Moreover, visual acuity and factors such as the sharpness of vision[81], depth perception[82], the optical field[81], and sensitivity to brightness[83,84] seem to influence driving behaviour. Health can contribute to accidents[85] for two major reasons:

- It can limit performance, e.g., a loss of limb function can lower pedal control, and a visual impairment can prevent recognition of dangers.
- It increases the likelihood of sudden loss of capability, due to a seizure, an acute cardiac event, insulin shock, etc.

Alcohol and drug consumption

Alcohol consumption results in impairment because it produces poor judgement, increased reaction time, lower vigilance, and decreased visual acuity. Physiologically, alcohol lowers blood pressure and level of consciousness, and also slows down breathing. In addition, alcohol has analgesic and general anaesthetic properties.

It has also been suggested that alcohol distorts a person's self-evaluation, leading to an overestimation of driving ability. Indeed, studies have found that people who drink and drive do not believe that their consumption of alcohol affects their driving. In one of these studies, the participants believed that their driving was improved by one or two drinks[86]. Furthermore, it is not uncommon that drivers who frequently drink and drive also have other problems with alcohol[87].

Concerning driving under the influence of drugs, only a few studies have measured how prevalent this behaviour is. One study carried out in Australia[88] demonstrated that 1% of the driving population took illegal drugs (primarily cannabis) and about 4-6% of the driving population took legal drugs (primarily stimulants, hypnotic or anti-anxiety drugs, or drugs without impairing effects). The most commonly used illicit drug is cannabis, and it is believed to be present in a significant proportion of drivers killed and injured in road accidents[89]. However, due to the difficulty in detecting drugs in a person and the fact that the police tends not to carry out drug-use tests, the proportion of killed and injured due to this factor is subject to great uncertainty. Hence, one of the objectives of the European DRUID project (Driving under the Influence of Drugs, Alcohol and Medicines) is not only to improve the possibilities of detecting drug-influenced driving in Europe, but also to increase our understanding of the effects of both drugs and alcohol on driving (see Druid: www.druid-project.eu).

All of the above factors, which can modify the motivational, affective, and cognitive states of road users, have been integrated into models that describe road users' risk-taking behaviour. These models can highlight elements for understanding road users' risky behaviours.

1.3 Models of road users' behaviour

Models of risk-taking behaviour

In order to better understand road users' behaviour and to predict their reactions to potential safety measures, numerous models have been devised to describe and explain how and why people behave the way they do. However, many more models have been developed for drivers than for other road users. These models are designed to predict the limits of human performance (the best one can do in a given situation) and/or human behaviour (what one tends to do in a given situation within one's performance limits)[90]. Whilst performance models are used to predict the outer bounds of behaviour, models designed to explain and predict human behaviour assume that driving behaviour corresponds to the style and strategy that has been adopted to achieve pre-defined goals. Such models, which address task difficulty and/or individual motivations, are relevant for predicting a typical behaviour. Most assume that safety is a motive and emphasize road users' motivations as a key determinant of driving style and its safeness. According to Shinar[90], the most common motivation identified in driving research is risk, either the minimization of risk (minimizing risk rather than maximizing safety) or compensation for risk. Due to variability among road users, risk is relative; people behave according to the way they perceive the risk. In addition, perceived risk results from a balance between task demands and the individual's capabilities. Although most behavioural factors involved in driving (experience, motivations, emotions, etc.) contribute to the driver's ability to achieve a stable driving style in the changing road environment, in some cases they can lead to risk-taking[27]. Such behavioural factors, together with certain transient factors mentioned above, may lead to a disruption of that stability, thereby increasing the risk of a crash. Therefore, a suitable model should be used in planning any project aimed at road-safety improvement, such as a communication campaign. Below, you will find descriptions of the most relevant road-user models for the purposes of this manual.

Risk models applied to drivers

Risk is usually defined as the chance of incurring negative consequences[91]. Whenever an intentional behaviour is carried out despite potentially negative consequences, it can be described as risk-taking. Most risk models place personal motivation to maintain a subjective level of risk at or under the target level (i.e., the level of risk that will be accepted), depending on the driving situation[42]. In this view, the road user's behaviour is seen as reflecting a balance between personal motives (thrills, speed, etc.) and the subjective risk of being involved in a crash. The main point is that the subjective risks that drivers perceive can be far from the actual risks. The discrepancy between subjective and actual risk assessments may account for misunderstandings and driving errors, which, if not resolved in time, could create crash-prone conditions.

Models of risk-taking behaviour focus on the way drivers manage risk. The most relevant models for our purposes here are the *Risk Homeostasis Theory[43]*, later renamed the *Target Risk Theory[92]*, the *Risk Allostasis Theory[93]*, the *Zero-Risk Theory[94,95]*, and the *Threat Avoidance Model[39]*.

The *Risk Homeostasis Theory* postulates that the driver adjusts his/her driving behaviour in such a way that the perceived risk level is held constant. Insofar as this target level is generally above zero, and assuming that the driver's risk assessment is accurate, the adjustments he/she makes are necessarily associated with some objective risk of having an accident. This means that road users always operate at the maximum level of risk they are prepared to accept. According to this theory, there are three types of skills that have effects on driver behaviour: (1) perceptual skills, which determine the extent to which subjective risk corresponds to objective risk; (2) decisional skills, which refer to the driver's ability to decide what should be done in order to produce the desired adjustment; and (3) vehicle handling skills, which determine whether the driver can effectively carry out what should be done for this purpose. While some actions entail more danger than others, there is no behaviour without some risk. This assumption has given rise to the *Target Risk Theory[92]*, wherein the challenge is to optimise rather than eliminate risk. This optimal (or target) level of risk is determined by the following pragmatic factors[92]:

- The expected benefits of risky (comparatively dangerous) behaviour options.
- The expected costs of comparatively cautious behaviour options.
- The expected benefits of comparatively cautious behaviour options.
- The expected costs of risky behaviour options.

The first two factors increase the target level of risk, whereas the last two diminish it. A rational person should opt for the behaviour option (or set of alternatives) that is perceived as most likely to deliver the greatest net benefit. Therefore, the risks that drivers are prepared to accept (the target risk level) and the corresponding adjustment to traffic conditions are the sole factors affecting the driver's overall involvement in an accident. In this respect, altering the driver's target risk level by improving the road environment, providing relevant information and knowledge, and developing road safety communication campaigns are the most effective safety-promoting countermeasures[96].

More recently, Fuller[93] stated that the hypothesis of task-difficulty is not completely satisfactory, and that a more appropriate concept is allostasis (seeking stability through change[97]). Whereas homeostasis is the process by which a target condition is maintained through constancy, allostasis refers to adaptation to a more dynamic target condition and is defined as "*maintaining certain levels of biological conditions that vary according to an individual's needs and circumstances*"[93]. So, in the context of driving, task-difficulty allostasis is the focus of Fuller's *Risk Allostasis Theory[93]*: the driver manages the driving task by seeking a balance between task difficulty (determined by actual, changing conditions) and his/her perceived capabilities. Fuller cites recent studies in which feelings of risk were positively correlated with ratings of task difficulty and negatively correlated with safety margin (the larger the margin, the less feeling of risk). Accordingly, the

prevailing emotions surrounding speed choice (fear and frustration) determine the driver's risk threshold for fear and his/her frustration threshold for frustration arising from deviations from driving goals.

The *Zero-Risk Theory*[94,95] states that, due to human perceptual, cognitive, and motivational processes, drivers adapt their behaviour to risks on the road, whilst being motivated towards faster speeds and objectively more risky behaviour. There is a threshold of perceived risk, and as soon as this threshold is exceeded, the driver's regulation mechanisms come into play. Because of adaptation to risk and the motives involved, drivers are not able to take traffic risks into account to a rational degree. So, the perceived risk of a given action is zero even when there is an objective risk involved in that action. For most drivers, this threshold is too high and accidents are attributable to the gap between objective risk and perceived risk. The factors that increase this threshold, eliminating the sensation of risk, include risk-assessment errors, time pressure leading to speeding, and being overconfident in oneself. Generally, risk-taking results from an inaccurate assessment of the situation or a temporary change in the driver's risk threshold. The main implication of this theory is that the tendency for drivers to be motivated to drive at higher speeds – and thus to adapt to greater risks in traffic – should be counteracted. Speed limits are a necessary condition for effective traffic-safety measures. In addition, road safety communication campaigns, alone or combined with other preventive actions, are needed to target road users' motivations.

Fuller's *Threat Avoidance Theory*[39] suggests that, when drivers are confronted with a stimulus indicative of a potential aversive event, their behaviour depends in particular on the rewards and punishments of alternative responses. Accordingly, they are motivated to avoid aversive stimuli or threats, and anticipate potential threats that may arise in the traffic situation. When they believe that a certain threat is present, they might take actions to avoid it. This behaviour may be triggered by certain features of the driving situation, such as warning signs, the weather, etc. However, the driver may also choose to "meet the challenge" and undertake avoidance actions at a later moment if needed.

The concepts of risk and threat are central to risk theories, which assume that when risk or threat increases, drivers adapt their behaviour in order to cope with the situation. In terms of appraisal theory, behavioural adaptation may therefore be considered as an emotion-based action tendency rooted in fear[98].

Vulnerable road users

Conflicts and accidents involving pedestrians and riders of two-wheeled vehicles may be due to an inadequate road environment, and of course, to motivational factors. These types of road users are the most vulnerable ones in the road environment, which rarely fits their safety and mobility needs. The key to reducing conflicts and accidents includes thoughtful planning and design, but also educational campaigns. These aspects all play a part in improving safety for two-wheel vehicle riders and pedestrians.

Motorcycle/bicycle riders and pedestrians are particularly vulnerable when they are sharing the road with drivers. For this reason, roadway design should take into account existing guidelines and recommendations aimed at reducing road accidents involving this category of road user. Moreover, road safety communication campaigns and related enforcement measures should address driver behaviour with respect to vulnerable road users. Similarly, strategies for improving vulnerable road users' behaviour should incorporate education, enforcement, and behavioural encouragement dimensions into conflict management.

Current statistics show that powered two-wheel (PTW) vehicle riders are over-represented in fatal crash statistics, particularly when compared to fatalities among persons in cars. Although driving a car and riding a PTW vehicle impose similar cognitive demands, there are differences in the perceptual and psychomotor processes they call upon, which has implications in traffic conditions. These differences concern mainly the assessment of the situation and its effects on anticipating future situations and controlling them[99]. Considering the greater proportion of accidents among PTW riders, road safety communication campaigns should focus on speeding, risky manoeuvres, and interactions with pedestrians and cycle riders.

A systemic approach to human safety management on the roads

Current research on human error and related safety-management practices is taking a systemic approach wherein errors committed by operators are considered along with the role of various latent conditions that reside within the system. Reason's Swiss cheese model[32], which seems to be the best and most widely recognised systemic approach to human error, describes the interaction between latent failures and errors and their contribution to organisational accidents[100]. According to this model, defence layers are designed and implemented to prevent accidents at each one of the different organisational levels of a complex system. However, there can be weaknesses (or holes) in these defences caused by latent failures, in such a way that active errors bypass the defences that have been put in place and thereby cause an accident. In the context of road safety, human behaviour is regarded as the most closely factor related to accidents, since the driver is the last link in the chain when making the decision that will turn out to be appropriate or inappropriate. In contrast, environmental and organisational factors leading to an accident are rarely taken into consideration, although they are highly important for incorporating preventive defences into the roadway system[22]. Stating that human error is both universal and inevitable, Reason asserts that errors should be viewed as consequences rather than causes. From this perspective, the roadway system's vulnerabilities, as well as the required barriers to the occurrence of a latent failure, should be identified in order to create defences that can protect against expected and unexpected disturbances.

Figure 14 presents the hypothetical breakdown of a latent failure in the decision-making process leading up to an unsafe act: a rural road in rainy weather conditions that causes the pavement to be wet (first hole); a lack of enforcement (second hole) allowing for inappropriate behaviour; bad condition of the car's tires due to a lack of maintenance (third hole); the driver is under the influence of alcohol (fourth hole); external pressure imposed by another driver's speeding (injunctive behaviour) (fifth

hole); finally, the driver – feeling stressed due to the pressure created by the other driver and overconfident of his/her ability due to the effect of alcohol – speeds up and decides to overtake the slower vehicle in front. This decision is the final unsafe act leading to the accident, which in fact results from the interaction of the various elements occurring at the preceding system levels.

In this model, three of the identified layers concern the road user's behaviour: a technical impact (partially dependent on the driver's past actions regarding vehicle maintenance), and individual and social impacts, which concern all road users' behaviour. The lowest level is the last one in the decision-making chain; it is the human being, who can commit an unsafe act such as an error or a violation.

Although behaviour is highly influenced by human factors, it can also be influenced by the environmental setting, the vehicle, and law enforcement. The remaining levels of this model (structural and organisational influence, legal influence) concern organisations and professionals responsible for the infrastructure, road equipment and environment, and regulations and enforcement; these levels are therefore not addressed in road safety communication campaigns. However, knowledge about human factors that sheds light on how the model's upper levels affect road-user behaviour should be included in training programmes for professionals, so that it can be applied to roadway design and enforcement. Road safety being a shared responsibility, supportive activities could involve all levels by way of integrated campaigns designed to make the roadway system more error tolerant.

Based on this model, road safety communication campaigns should target the levels that influence road-user behaviour, since the ultimate goal is to reduce unsafe acts: (1) the technical level, particularly concerning maintenance and the use of in-vehicle technologies, and (2) individual and social behaviour affected by factors leading to unsafe acts. Road safety campaigns, with or without supportive activities, target the individual and social levels. Together, these elements comprise an integrated approach. Theories of behavioural change provide a very useful background for successfully influencing road-user behaviour.

Figure 14 ■ *Application of the Reason's Swiss Cheese model to the roadway system highlighting an example of latent conditions passing through the hole*

Integrated Approach

Combined Actions

Road Safety Communication Campaigns (media only or with supportive activities) addressing behaviour changes

Structural and organisational influence

Legal influence

Technical influence

Individual influence

Social influence

Unsafe acts

Road infrastructure and road environment contributing conditions

Legal framework, licensing and enforcement contributing conditions

Vehicle contributing conditions

Road user contributing conditions

Other road user contributing conditions

Errors Violations

Evolution of a latent failure

Rural road with poor weather conditions: wet pavement

Lack of enforcement

Lack of maintenance

Driver under the influence of alcohol

Injunctive behaviour

Inappropriate overtaking

Accident

Training issues on human factors

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1.4 Behavioural change theories

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In this section, we will present important factors shown to be linked to volitional behaviour. Next, we will discuss how people can be motivated or persuaded to change their behaviour. Finally, we will describe the process of change itself, right through to the establishment of new behaviour.

Important factors that determine behaviour

Once a problem behaviour has been identified, the next question that needs to be asked is why road users display such behaviours. If the problem behaviour is not deliberate (it can be due to a lack of knowledge), then the campaign should bring information on this problem in order to convince road users to change their behaviour by themselves. If, however, the problem behaviour is volitional (intentional mistakes and/or violations), where the individual chooses to commit an unsafe act despite his/her having the necessary knowledge, then, it is necessary to identify what motivates the road user to adopt such behaviour. The best way to do this is to refer to a theoretical model. A theoretical model can be both explanatory and descriptive, capturing important elements and variables, and providing a structure for describing interrelationships and ultimately predicting behaviour.

Factors related to an individual's behaviour have been utilised in several major theories that attempt to account for human behaviour. In many cases, differences between theories lie in their different terminologies or emphases rather than in any fundamental incompatibility. As such, prior to presenting and examining individual theories, it is useful to define one of the key factors included in many theories dealing with violations, namely, attitudes and their relationship to behaviour.

Attitudes

The term *attitude* has been defined in many ways, but in the literature, at least five common features of these definitions appear: (1) an attitude includes both an evaluative and an emotional component; (2) it is more of a *predisposition* to respond to something than being an actual behaviour; (3) the response can be favourable, unfavourable, or somewhere in between; (4) the attitude persists over time but is amenable to change; and (5) it is the result of learning rather than being an innate quality. Responding in a favourable or unfavourable way indicates some form of evaluation. The evaluative response may be *cognitive*, *emotional*, or *intentional*. The cognitive component refers to a belief about an object but also a belief about how the object should be treated. The emotional component refers to feelings evoked in the individual by the object of the attitude. The intentional tendency refers to behavioural readiness to respond to the object. A positive attitude towards speeding could be that it is enjoyable (emotional) and helps in reaching a destination more quickly (cognitive). This in turn increases the person's willingness to speed. The assumption is that behaviour is engaged in if the person's attitude suggests that the behaviour will result in a positive outcome.

An attitude is less influenced by situational factors than is a preference, but it is less stable than a personality trait, which means that it can change[101]. This is important, since a change in attitude might also result in a change in behaviour.

The relationship between attitudes and behaviour

The relationship between attitudes and behaviour has been widely debated and has been the focus of a large body of research. Some early studies obtained results suggesting that the relationship is in fact rather weak (see for example Wicker, 1969[102]). Later research, however, concluded that the problem is methodological rather than theoretical.

For instance, one problem is that previous studies tried to predict specific behaviours from general attitudes (e.g., attitudes towards speeding in general were assumed to predict speeding prevalence in an urban area). The principle of compatibility has been used to overcome this problem with some success. This principle states that both the attitude and the behaviour need to be measured at the same level of generality or specificity. Moreover, behaviour has to be measured several times, and attitude(s) have to be measured on several items (aggregated data).

A second reason for the low correlation between attitudes and behaviour has to do with the strength of the attitude. One model, the *MODE model*[103], distinguishes between strong and weak attitudes, arguing that stronger attitudes have a greater influence on behaviour. *MODE* is an abbreviation for Motivation and Opportunity as Determinants of the processes through which attitudes influence behaviour. Essentially, an attitude is conceptualised as the link in memory between an attitude and an evaluation; the stronger (weaker) the link, the stronger (weaker) the attitude.

Theories that predict behaviour

Different theories have been developed to try to predict behaviour. In this section, four theories will be discussed: the Theory of Planned Behaviour, the Theory of Interpersonal Behaviour, the Health Belief Model, and the Protection Motivation Theory.

Theory of Planned Behaviour

Fishbein and Ajzen[104] argued that one important reason for the weak link between attitude and behaviour is that attitude is not the only factor affecting behaviour, so additional factors need to be considered. In the *Theory of Planned Behaviour* (TPB) and its predecessor, the *Theory of Reasoned Action* (TRA), attitudes but also subjective norms and perceived behavioural control affect behaviour indirectly via intentions. A schematic representation of the *Theory of Planned Behaviour* (Ajzen, 1989)[105] is presented in Figure 15.

The model argues that personal decisions to perform a behaviour (intentions) are based on attitudes toward the behaviour, subjective norms, and perceived behavioural control. *Behaviour* refers to an observable act (e.g., speeding 15 km/h over the limit on the highway), whereas *intention* is a willingness to try, or plan to execute, the behaviour (e.g., I think I will drive 15 km/h over the speed limit next

Figure 15 ■ Theory of Planned Behaviour
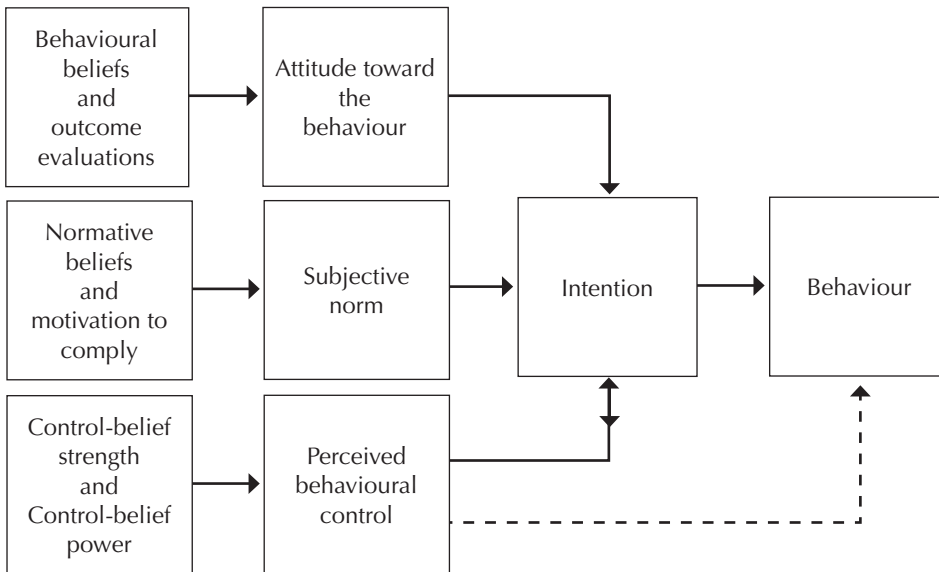
time I take the highway). People have access to information (be it correct or incorrect) about themselves and about the world around them (i.e., various attitude objects): this information is referred to as an individual's beliefs. Beliefs can be perceived and evaluated on a scale ranging from positive to negative. Attitudes can be instrumental (i.e., harmful-beneficial, useless-useful) and affective (i.e., enjoyable-unenjoyable, boring-interesting). *Subjective norms* refer to an individual's judgement of the opinions of others (e.g., family and friends) about a given behaviour. Subjective norms can also be a combination of three items, two measuring injunctive norms (i.e., perception of what ought to be done) and one measuring descriptive norms (i.e., perception of what others are doing)[106]. *Perceived behavioural control* can be defined as one's perception of how easy or difficult it is to perform a behaviour (e.g., I am capable of driving 15 km/h over the speed limit). This factors can be internal (e.g., self-efficacy and skills) or external (e.g., opportunities and constraints).

The dotted arrow in Figure 15 linking perceived behavioural control and behaviour indicates that an effect on behaviour can be both direct and indirect. Perceived behavioural control is a significant predictor of behaviour when control over the behaviour is low. For instance, the prediction of drinking and driving can be improved by including this variable. A person can have a negative attitude toward drinking and driving, and also experience social pressure to avoid using the car when under the influence, but may still drink and drive. The problem might be, then, that the person finds it difficult to control his/her own behaviour when he/she has been drinking.

In addition to attitudes, subjective norms, and perceived behavioural control, the model includes beliefs, which have an indirect effect on intentions. The model

makes no prior assumptions about the nature of these beliefs. Instead, relevant beliefs are elicited in pilot studies asking the respondent to list his/her beliefs about an object and the consequences. A person's overall attitude is determined by his/her beliefs about the attitude object. Theoretically, this is described as a combination of behavioural beliefs and outcome evaluations [1], where the former pertains to the consequences of performing the act and the latter, to how these consequences are evaluated. Indirect measures of subjective norms are defined in a manner paralleling attitude measures in that they are the product of beliefs about what others expect and do (*normative beliefs*, i.e., I think my friends expect me to drive 15 km/h over the speed limit) and about the degree to which an individual wishes to comply with the expectations or behaviours of others (*motivation to comply,* i.e., I want to comply with them).

Finally, perceived behavioural control is the product of *control belief strength* (e.g., my driving behaviour is very safe, I am a good driver, and I have a good car), which is comprised of one's perceptions of the external factors inhibiting or facilitating behaviour and one's beliefs that these factors have the power to facilitate or impede performance (*control belief power*, e.g., I think I am capable of driving 15 km/h over the speed limit). When using the model, it is not necessary to include both indirect and direct measures, since both should be able to predict intention and behaviour[107]. However, with regard to communication campaigns, indirect measures are especially important since they provide a deeper understanding of what motivates a person to act. It is these beliefs, then, that need to be targeted.

The theory recognizes the importance of background factors such as personality, mood, emotions, education, age, gender, past experience, and habit. However, these factors are not included in the model, and if they affect behaviour, it would be via mediation by the variables already included. Despite this, Fishbein and Ajzen[104] acknowledged the impact of habit and how it can interfere with the intention-behaviour relationship. From their point of view, it is not very relevant, however, to know that a behaviour has been carried out in the past. In any case, social scientists do not usually deal with automatic sequences of motor responses, although numerous studies have not been able to substantiate the claim that habit is irrelevant. Instead, they have found a direct relationship between past and present behaviour. Furthermore, when habit is added to the TPB, its predictive power is increased[108].

Theory of Interpersonal Behaviour

The *Theory of Interpersonal Behaviour*[109,110,111] (TIB), as diagrammed in the figure below (Figure 16), bears a strong resemblance to TPB in that it includes normative/social factors and the perceived consequences of a behaviour as predictors of intention, itself a predictor of behaviour. However, there are some key differences, an important one being that TIB also includes habit.

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1 Attitudes towards behaviour (AB) include all salient beliefs about the consequences of act *(b)* multiplied by an evaluation of those outcomes *(e)*. The resulting product is then summed across the number *n* of salient beliefs, using the following equation: $AB \propto \sum_i b_i e_i$.

Figure 16 ■ Theory of Interpersonal Behaviour
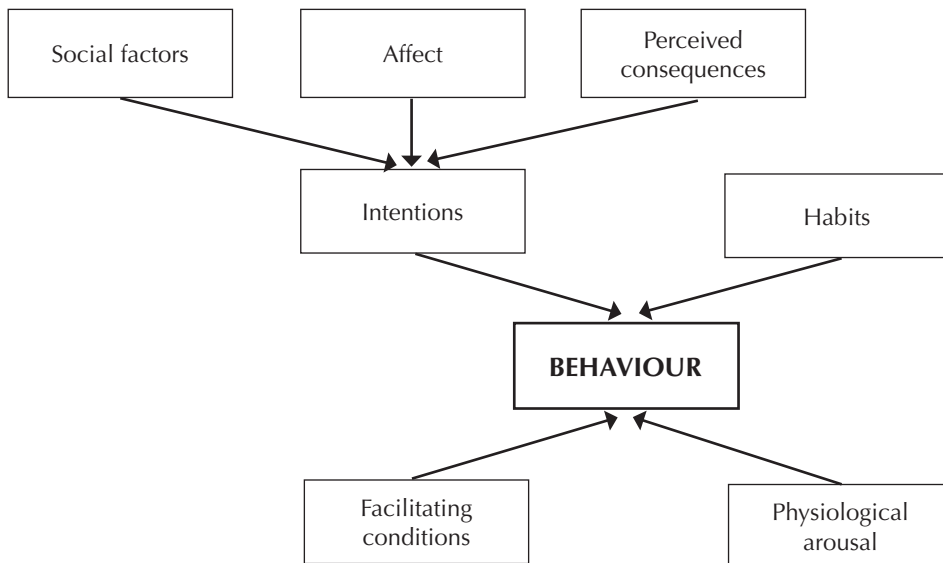
TIB argues that the role of habits increases as the level of consciousness decreases; intentions and habits are inversely related. It is important not to confuse habit with past behaviour or frequency of occurrence. Habit has to do with how automatic or semi-automatic a process is (hence, the level of consciousness is the key criterion). For example, the behaviour of an individual learning to drive a car or ride a bicycle is initially under the control of intention. However, with time and experience, driving or cycling becomes increasingly automatic, and therefore more under the control of habit (see task performance models, pp. 41-43).

The weight that intention or habit has in the performance of a behaviour is argued to be a function of three factors: the *person* (e.g., an expert who does this sort of thing all the time vs. a beginner), the *act* (e.g., a one-off occurrence vs. a behaviour that is regularly repeated in similar situations), and the *situation* (e.g., a stable, predictable situation vs. a dynamic, ever-changing situation).

TIB posits two groups of important relationships involving two variables:

■ *Behaviour*. The relationship between behaviour and various constructs is seen as the probability or likelihood of an act occurring (e.g., the likelihood of wearing a seatbelt). This is influenced by the relative importance of habits and intentions (which are inversely related, as described above), taking into account physiological arousal and facilitating conditions.
■ *Intentions*. Intentions are a function of social factors (i.e., what the individual believes is morally, ethically, and normatively correct to do), affect (i.e., an individual's emotional response to an act, which can be based on either direct or indirect experience), and perceived behavioural consequences (i.e., what an individual believes will occur as a consequence of performing an act, as well as the

value attached to that consequence). Of particular importance are social factors, which include normative beliefs (e.g., the influence of close friends, parents), role beliefs (i.e., if the behaviour is appropriate or not with regard to the individual's perceived social role), and personal-norm beliefs (i.e., internalised social norms that measure a sense of moral responsibility or what the individual feels he/she ought to do).

The two groups of behaviour-related and intention-related relationships highlight the role that level of consciousness plays in a given behaviour, and at the same time as they point out the differences between TIB and TPB. More specifically, to the extent that a behaviour is habitual, the probability of an act occurring is determined more by habit than by intention (and also *physiological arousal* and *facilitating conditions*). If, on the other hand, intention plays a role (in addition to physiological arousal and facilitating conditions), then social factors, affect, and perceived consequences play a role in determining the nature of the behaviour. This suggests that traffic-safety practitioners seeking to organise a campaign need to be aware of the nature of the behaviour they are trying to change. If the behaviour is habitual in nature, then a campaign that targets intentions, or any factor influencing intentions (e.g., social factors), will have little effect. For example, drivers who usually do not drink and drive but who may for whatever reason find themselves in a situation where they are over the legal alcohol limit and need to drive home (e.g., after a co-worker's birthday party or an office Christmas party) will be more responsive to a campaign that urges them to go back and get their car the next day if the campaign gives overt evaluations of the advantages and disadvantages of doing so (e.g., by referring to social factors and norms, mentioning the consequences of a potential fine, licence suspension, or a driving accident). Drivers who habitually drink and drive, on the other hand, are not likely to be responsive to such information, as they do not generally evaluate the pros and cons in a conscious fashion.

Health Belief Model

Another theoretical model used to explain behaviour and to assist in the design of many campaigns, particularly health campaigns, is the *Health Belief Model*[112] (see Figure 17 below). Since it was proposed in the 1960's, this model has been modified several times through the addition of new variables to better explain behaviour (e.g., self-efficacy is similar to the perceived behavioural-control variable included in TPB).

However, the *Health Belief Model* (HBM) is broader than the TPB because it also includes a number of different emotional responses. It is based on the idea that the desire to avoid a negative health consequence is the key motivator for taking a positive action likely to preserve or promote health. While people may take positive actions for other reasons (e.g., doing physical exercise to look good or driving slowly to enjoy a scenic route or minimise fuel consumption), such cases fall outside the explanatory realm of the HBM, where avoiding a negative health outcome is para-mount. In other words, a seatbelt is worn in order to avoid being seriously injured in case of a road crash.

Figure 17 ■ *Health Belief Model*
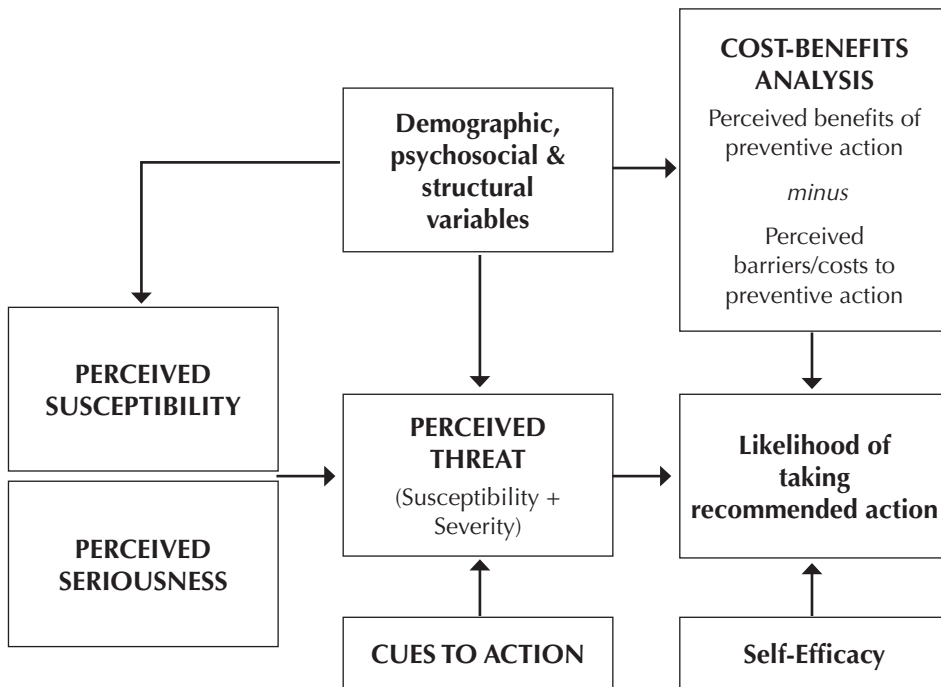
Although the model may seem complicated, there is an inherent logic to its struc-ture that is quite easy to follow. The model considers six main areas that are likely to influence whether an individual will be inclined to act in a certain way (e.g., speeding, not wearing a seatbelt) that is detrimental to his/her health.

■ How *susceptible* does the person feel to the health hazard or to the negative conse-quences associated with a behaviour (such as speeding)?
■ How *serious* are these consequences?

Together, perceived susceptibility and perceived seriousness define the *perceived threat* associated with a health hazard or with a given behaviour. Perceived threat must be high for an individual to consider behaviour change.

■ What are the *perceived barriers* (both tangible and intangible) that decrease the likelihood of action (e.g., reducing speeding)?
■ What are the *perceived benefits* (both tangible and intangible) that increase the likelihood of action?

The perceived barriers and benefits are weighed in a kind of *cost-benefit analysis* performed by the individual when considering a change in behaviour. The greater the benefits (e.g., positive image, avoidance of speeding fines or injuries) as compared to the barriers (e.g., loss of macho image or a sense of freedom), the more likely it is that a change in behaviour will occur.

■ How confident is the individual in his/her ability to take action (e.g., in resisting pressures encouraging one to speed or to drink and drive)? This "confidence" is referred to as *self-efficacy*.

■ Which internal (e.g., unpleasant memories of how a speeding-related accident affected close friends or family) or external (e.g., advice from others, information in the media, or education) *cues to action* are able to motivate readiness for behaviour change or raise the *likelihood of action* (directly or indirectly) by increasing the perceived threat?

Protection Motivation Theory

Another theory that deals with perceived threat is the *Protection Motivation Theory*[113,114] (see Figure 18). This theory states that appraisal of a threat and appraisal of a coping response to the threat result in the intention to give adaptive responses (protection motivation), or may lead to maladaptive responses that place an individual at risk. The theory explains why people engage in unhealthy or unsafe practices.

According to the *Protection Motivation Theory* (PMT), *adaptive* and *maladaptive coping responses* with a health threat (e.g., speeding, drinking and driving, smoking) are a result of two appraisal processes: *threat appraisal* and *coping appraisal*.

Figure 18 ■ *Protection Motivation Theory*
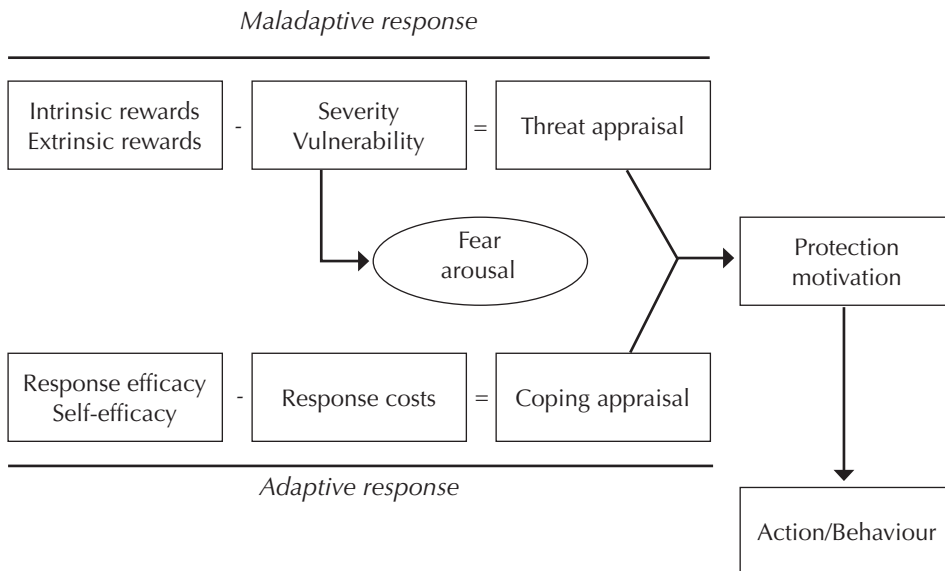
Threat appraisal is a function of the severity, vulnerability, and extrinsic and intrinsic rewards associated with performing a given (unhealthy) behaviour (e.g., speeding):

■ *Severity* refers to the perceived degree of harm that may result from the unhealthy behaviour.

■ *Vulnerability* refers to the individual's perceived chances of experiencing a negative outcome (e.g., health hazard or injury) associated with the behaviour.
■ *Extrinsic and intrinsic rewards* refer to the positive aspects of beginning or continuing an unhealthy or unsafe behaviour (e.g., saving time, feelings of freedom that may be associated with speeding on a highway).

Thus, when performing a given act, the greater the rewards an individual experiences relative to the perceived severity of the consequences of that behaviour and his/her perceived vulnerability to those negative consequences, the lower the experienced threat will be. For instance, the sense of freedom or the adrenaline rush associated with speeding, together with the image projected to peers, may outweigh an individual's perceived vulnerability to speeding-related injuries, irrespective of whether he/she regards these as serious (for perceived threat to be high, both vulnerability and severity must be high). The result of such a faulty threat appraisal is a maladaptive response, namely speeding: there is low motivation to protect oneself.

Coping appraisal is a function of response efficacy, self-efficacy and response costs associated with executing a given recommended behaviour (e.g., wearing a seatbelt):

■ *Response efficacy* refers to the perceived ability of the recommended behaviour to eliminate or prevent harm or injury.
■ *Self-efficacy* refers to the level of confidence one has in his/her own ability to perform the recommended behaviour.
■ *Response costs* refer to the tangible and intangible costs associated with the recommended behaviour (e.g., monetary expenses, inconvenience).

Thus, one's perceived ability to cope is a combination of response efficacy and self-efficacy, less the response costs. For example, a reduction in speed might be seen as an effective means of reducing the risk of a traffic accident (i.e., response efficacy is high). If a driver believes that he/she can do this (i.e., self-efficacy is adequate) and that there is little inconvenience as a result of adopting this action (i.e., response costs), then it is more likely that the driver will adopt the action than when the opposite is true.

Protection motivation itself is what is referred to as an intervening variable. It is influenced by the outcome of an individual's threat and coping appraisals, which in themselves do not directly lead to adoption of a recommended behaviour and/or inhibition of an unhealthy or unsafe behaviour. It is protection motivation in an individual that leads to action or inhibition of action. Thus, returning to our ongoing example of speeding, if the threat appraisal results in the perception of a threat (e.g., severity of speed-related accidents, realisation of vulnerability) and if the coping appraisal indicates adequacy and effectiveness (e.g., it is easy for me to slow down, slowing down is effective), then protection motivation is likely to be increased. Eventually, this will increase the likelihood of adopting the recommended behaviour, i.e., slowing down.

PMT is able to explain both rational and irrational decision-making processes. For example, when response efficacy and self-efficacy are high and/or vulnerability and severity factors are high, then it is likely that an individual will perceive the threat but also simultaneously feel that he/she can do something about it. The result is a positive main effect on the intention to protect oneself. If, on the other hand, response efficacy and self-efficacy are low and vulnerability and/or severity factors are high, then an individual will feel helpless and unable to do anything about the threat, and there will be no intention to comply with any recommended preventive behaviour (consider, for example, an addict who knows the dangers of alcohol abuse but feels powerless in dealing with the issue). That is, when an individual feels incapable of performing a recommended behaviour and/or the behaviour is seen as being ineffective, information about a health threat may lead to increase in maladaptive responses rather than adaptive responses. This is one important reason why fear appeals do not always work (see also *The message,* pp. 123-136, and *Devising the structure and style of the message,* pp. 227-229).

Some of the constructs in the *Health Belief Model* and the *Protection Motivation Model*, namely perceived threat, threat appraisal, perceived susceptibility, severity, and vulnerability, can also be related to police enforcement and sanctions. The *Deterrence Theory* states that a person will avoid a criminal act if he/she believes and fears that it will result in sanctions. More specifically, this theory (for a review, see Myers, 2005)[115] suggests that law-breaking is inversely related to the certainty, severity, and swiftness of punishment, although recent work indicates that certainty of punishment has a greater impact than severity or speed[116]. Notwithstanding these recent findings, it is commonly regarded as a mistake to emphasise one element of deterrence at the expense of the others. There are also two main types of deterrence: specific deterrence, which is when punishment acts to reduce recidivism, and general deterrence, which is when the fact of punishing offenders discourages others from offending (e.g., the general public or people who know of the punishment vicariously). That is, both general and specific deterrence are part of the deterrence process, but the former is concerned with one's indirect experience with punishment whereas the latter is concerned with one's direct experience of punishment[117]. In this framework, law enforcement can be seen as preventing violations through general deterrence, and if a violation occurs, as preventing further violations through specific deterrence.

In summary, it is clear that a wide variety of theories have been put forward to account for and predict human behaviour. Some theories are very similar despite different terminology; others are quite distinct. In general, though, we can say that previous research has identified a number of critical factors and determinants that a practitioner should not ignore (see Table 3).

Table 3 ■ *Variables in the different theories that predict behaviour*

Constructs	Theory of Planned behaviour	Theory of Interpersonal Behaviour	Health Belief Model	Protection Motivation Theory
Attitudes	X	(perceived consequences)	(cost benefit analysis and how serious)	(extrinsic and intrinsic rewards and response cost)
Affect	(affective attitudes)	X		(vulnerability)
Perceived susceptibility			X	(severity)
Perceived threat			X	
Social factors	(subjective norm)	X	(cues to action)	
Perceived behavioural control	X			
Self-efficacy	(perceived behavioural control)		X	X
Intention	X	X	(likelihood of taking action)	(protection motivation)
Habit		X		
Facilitating conditions	(perceived behavioural control)	X		
Perceived barriers	(perceived behavioural control)	X		
Physiological arousal		X		
Demographic factors			X	
Behaviour	X	X		X

Note. X = constructs with the same name. Constructs in parentheses are similar but not the same.

Theories that explain persuasion and change at a general level

Attitudes can be changed in many ways and some people are more susceptible to change than others. Persuasiveness can be described as the ability to induce in someone a belief with which they initially disagreed, and to convince them to do something different.

A number of different theories have been put forward in an effort to understand attitude change and persuasion, including those presented above (see TPB or TIB, pp. 60-64). However, little is said about *how* an evaluation or a belief can be changed, *how* a new belief or evaluation can be introduced, or *how* to convince an individual that the new behaviour serves his/her purposes better. To improve our understanding of how to go about changing beliefs or attitudes and how to go about persuading an individual to adopt new attitudes or behaviour, one needs to refer to specific theories of persuasion or motivation to change. In this section, two different theories will be outlined: the Elaboration Likelihood Model and the Associative-Propositional Evaluation Model.

Elaboration-Likelihood Model

The *Elaboration-Likelihood Model*[118] (ELM) builds on the central assumption that attitudes are important because they influence various types of behaviour (i.e., choices, decisions, actions). ELM sees persuasion as a means of forming or changing attitudes; attitudes may also result from other processes, such as direct experience. The ELM model, illustrated below (see Figure 19), features two routes of persuasion by which attitude change may occur: central (on the left of the figure) and peripheral (on the right)[1].

As can be seen, ELM is an attempt to explain differences in the effect of persuasion in terms of the ability and motivation of an individual to think about the position being advocated in the communicated message. There are several factors that may encourage a person to process a message. For example, people may be motivated to process a communicated message if it is perceived as relevant to themselves or if they feel a high degree of personal responsibility. Using drinking and driving as a case in point, a teetotaller is unlikely to bother paying attention to a message communicating the dangers of alcohol. Furthermore, motivation alone is not enough: an individual also needs to have the ability to cognitively process a message. Factors influencing an individual's ability include things like whether or not the individual experiences any distractions, whether he/she has any prior knowledge of the message being communicated, and whether the message is comprehensible or not. A person who drinks and drives, for example, may not be able to process a message about the dangers associated with driving under the influence, because of time pressure or some other distraction.

Now why are ability and motivation important? It is argued that they encourage a type of cognitive processing in which high elaboration is present. High elaboration

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1 You may also wish to refer to the *Heuristic-Systematic Model* or HSM, built on the assumption that humans are cognitive misers that seek to avoid using all their cognitive resources unless necessary. The difference between ELM and HSM is that HSM states that the two processes can occur in parallel. See Eagly, A.E., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace.

implies that people actively think about a message or a communication, critically judge and evaluate it, and link the content to information they already have stored in memory. Of course, the nature of the cognitive processing in which an individual engages depends on various factors. For instance, a person who disagrees with a communicated message is more likely to generate counterarguments than one who agrees with the message. Another factor that influences the nature of the cognitive processing taking place is the quality of the arguments in the message. Whatever the case may be, any attitude change resulting from high elaboration is argued to be well articulated and supported by evidence and information.

Figure 19 ■ *Elaboration-Likelihood Model (ELM)*[119]
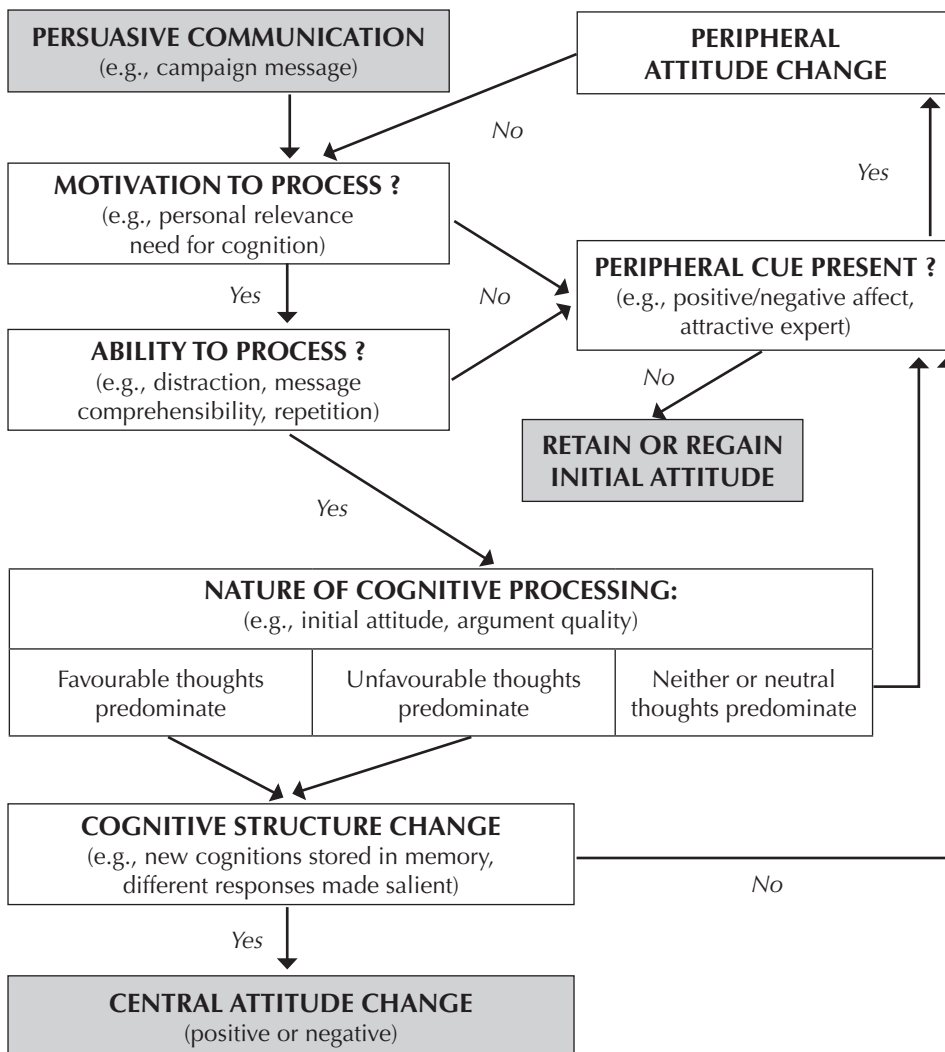
In contrast, low elaboration results in attitude change through the peripheral route, where laborious processes are avoided and the resulting attitude is arrived at using a rule-of-thumb or a heuristic[120], e.g., information extrinsic to the message itself such as source expertise, trustworthiness, attractiveness, the number of people advocating the view, and whether the message is communicated by an expert. For example, a person may not bother to actively process the arguments in a message about the health dangers of alcohol if they come from a doctor – an expert who is assumed to be right. For these reasons, attitude change occurring as a result of peripheral-route processing is more stable than change occurring via the central route. It is also important to note that even if one is willing and able to engage in extensive processing of a message, if only peripheral cues are present then low elaboration will occur.

To sum up, engaging in high-elaboration processing requires an ability to do so and a motivation to do so; motivation without the ability is insufficient. Furthermore, assuming both ability and motivation are present, then the right type of informa-tional cue needs to be present (i.e., not simple heuristic cues). This is not to say that persuasion cannot occur with low elaboration; quite the opposite. Persuasion can occur with low elaboration but in such cases, rather than being guided by the assessment of the message (as with central-route processing), the individual follows a principle or a simple decision rule that is derived from the situation at hand.

Associative-Propositional Evaluation Model

The *Associative-Propositional Evaluation* (APE) model[121,122,123] is one of a host of so-called dual-attitude models. While the core concept of attitude as the evaluation of an attitude object is retained, APE (and similar dual-attitude models) argues that these evaluations can be based on two kinds of attitudes, implicit and explicit.

Implicit attitudes are based on associative processes. These associative processes imply that evaluations can be described as automatic, affective reactions that are activated when the individual encounters an attitude object as a result of feature similarity. In other words, in the same way that "salt" tends to be automatically associated with "pepper", implicit attitudes are automatically associated with their attitude object (e.g., for some people, positive evaluations may be automatically associated with a sunny day at the beach). Such associative evaluations do not require substantial cognitive resources or an intention on the part of an individual, and they are activated irrespective of whether the individual considers them to be true or false.

Explicit attitudes, simply stated, are evaluations that are reported by the person who holds those attitudes. In contrast to implicit attitudes, explicit attitudes are presumed to be activated in a more deliberative manner, one that requires cognitive effort. Furthermore, a person has conscious access to explicit attitudes (whereas this is not always the case with implicit attitudes). In this model, explicit attitudes are said to better predict behaviours that are under greater volitional control. Unlike implicit attitudes, they derive from evaluative judgments in the form of proposi-tions that the attitude holder considers to be accurate or true. Let us take the case of speeding along an open stretch of highway. This may lead to automatic positive

evaluations (e.g., the wind blowing in your hair), and as such, positive implicit attitudes. However, by activating the propositional knowledge that speeding can be dangerous, one may elicit more negative evaluations and thus more negative explicit attitudes.

The differing processes assumed to underlie implicit and explicit attitudes also imply that attitude change proceeds differently, depending on the type of attitude being changed. Implicit attitude change implies a change in associative evaluations. Generally, changes in associative evaluations can occur in one of two ways. The first involves incremental changes. For example, many commuters avoid public transport because they believe it is overcrowded, slow, dirty, and so on. A common way of encouraging people to use public transport (e.g., car commuters or other groups who have never experienced it) is to provide free travel passes for a limited period of time. The idea here is that experience with an efficient public transport service will lead to the development of a new positive association being formed due to repeated exposure during the trial period. The second way that can bring about a change in associative evaluations involves changes in the pattern (but not structure) of the activation associated with an object. A change in the pattern of activation associated with existing structures can occur as a result of changes in simple context cues. For example, in recent evaluations of training courses for so-called "supersport" motorbikes in Sweden, it was found that riding extremely rapidly to test one's limits was viewed positively when it was done on a racing track but less so when done on public roads.

Explicit attitude change can imply one of three things: (i) that the underlying associative evaluation of the attitude object (i.e., implicit attitude) has changed, (ii) that there has been a change in the set of propositions or information that an individual uses or considers relevant when evaluating an attitude object, or (iii) that there has been a change in the strategy used to achieve consistency within a set of propositions[121]. Taking the first possibility into account, the idea is that changes in associative evaluations cause subsequent changes in evaluative judgements. It is based on the fact that affective reactions can and do serve as a basis for evaluations. In other words, one's spontaneous, emotional reactions to a stimulus influence what one thinks and believes about that object. The second possible way by which explicit attitude change may occur involves changes in the body of information used to evaluate an attitude object, either through the acquisition of new beliefs or information, or through additional consideration of already familiar events. This second possibility is best captured by the major existing theories of persuasion or attitude change outlined above (ELM and HSM) wherein a message is seen as a set of propositions (be they systematic/central cues or heuristic/peripheral cues) that can change the information considered by individuals when making an evaluation.

Theories that explain the process of change

In addition to theories that try to explain and predict behaviour, as well as theories attempting to account for persuasion, there are theories accounting for the process of change itself. These theories are important because they provide insight into why, despite a successful persuasion campaign in which a target audience has accepted a certain target behaviour (e.g., to use a seatbelt or refrain from speeding), the desired behaviour may not emerge. When devising an appropriate intervention, a good

campaign practitioner may fare better if he/she understands the change process, which in turn can provide valuable information about the target group. It can also assist the campaign practitioner by providing deeper insight into how a person can be helped to change.

Transtheoretical Model of Change

The *Transtheoretical Model of Change* was developed by Prochaska and DiClemente (1983)[124], who outlined six stages that individuals go through before a new behaviour can be firmly established (see Figure 20). The approach clearly emphasises the importance of matching an intervention to the different needs of individuals.

The stages of this model are as follows:
1 Pre-contemplation – the individual has no intention to change his/her behaviour and may even resist change.
2 Contemplation – the individual starts to become aware of the problem, with the costs and benefits of the old behaviour being equal.
3 Preparation – the individual has begun preparations for change.
4 Action – change has occurred but the risk is still high that the individual will return to previous behaviour patterns.
5 Maintenance – the new behaviour has started to become a habit.
6 Termination – the new behaviour is established and the individual is not likely to return to the old behaviour.

Figure 20 ■ *Transtheoretical Model of Change*
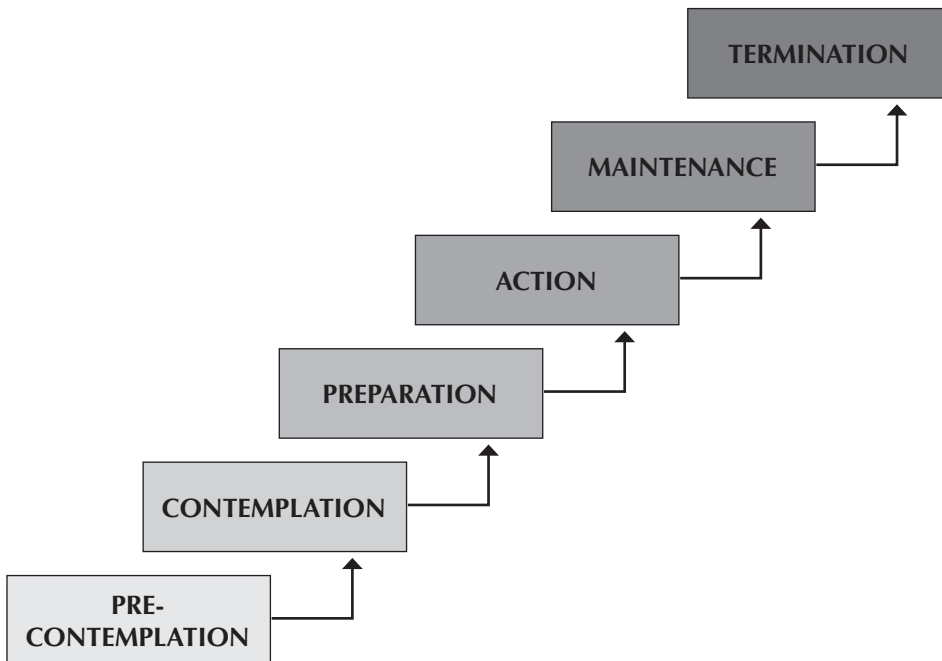
Progression through these stages is not irreversible, since it is possible for a person to move both forward and backward. It has therefore been suggested that the word "stage" be replaced by "phase"[125].

A person in the stage of *precontemplation* might, for example, be a driver who always exceeds the speed limit and who has not even thought about why it is wrong to do so. Thus, merely informing this driver about the disadvantages will not have the desired effect. Message evaluation depends very much on the receiver's own underlying beliefs, which may be based on things like thinking, wanting, fearing, or wishing. Researchers have found two types of pre-contemplators: non-believers and believers. Using speeding as an example, non-believers do not think their own actions have any effect on themselves or on traffic safety in general. Believers, on the other hand, think that observing speed limits is important but cannot see why it should apply to them. Thus, different strategies are needed to deal with these two groups of people[126]: non-believers need to be made aware of the problem, whereas believers need help in understanding that the problem also applies to them. Unfortunately, people in the pre-contemplation stage are usually very difficult to reach since they do not volunteer for programmes or actively seek information. However, Reed (2001)[126] found that it is possible to contact this group of people by proactively seeking them. Another strategy could be to introduce a number of "push" and "pull" measures (or sticks and carrots). For example, drivers who adhere to the rules of traffic could be offered a cheaper insurance (pull) and those who violate would encounter more severe punishments (push).

Thus, before progressing to the second stage, *contemplation*, a great deal of effort is needed to make individuals aware of problems and the role they themselves play. To encourage this, the conflict between their own needs (e.g., freedom) and the more general public needs (e.g., traffic safety) needs to be highlighted. If this is successful, they will experience some form of dissonance and become dissatisfied with their own behaviour, resulting in a desire to change. However, if the other alternatives are seen as unattractive or impractical, then the chance is very small that they will change despite this new understanding. People in the contemplation stage are open to new information and want to know more. DeBono (1987)[127] found that a message was persuasive if it was functionally relevant. In his study, the message was able to persuade the subjects if they became convinced that their attitudes were counter-productive and failed to serve their function (i.e., that a different attitude would be more useful). However, if subjects were not convinced by the message, then they remained in the contemplation stage, needing a push from others. That is, people do not live in isolation and the views and behaviours of others are important. In the language of the TPB, this has been described as a subjective norm, which reflects perceived pressure from others to behave in a certain way.

Success in the contemplation stage implies that the concerned persons are now able to move on to the third stage, *preparation*, which means that they now start to prepare themselves for *action*. In the action stage, circumstances surrounding the person, such as how they will be perceived by others, become important. Once action is taken, it is vital that the new experience be rewarding; otherwise there is a risk that the person will return to the old behaviour. The fourth stage, *maintenance*,

is the stage in which the new behaviour starts to become a habit. The final stage is *termination*, which is when the new behaviour is established and the individual is unlikely to return to the old behaviour.

Theory of Self-Regulation

Campaign designers may also wish to aid or influence the behaviour-change process. One theory that can be used to describe the way in which people go about changing their behaviour is the *Theory of Self-Regulation*[128,129,130] (see Figure 21). In this theory, the change process is based on the concept of negative feedback. This means that individuals compare their current situation with a goal or reference situation (i.e., the desired outcome of the change). If a discrepancy is observed (i.e., the goal has not yet been achieved or a desired behaviour has not been displayed), then some action is carried out, thereby minimising the discrepancy.

Figure 21 ■ *The Theory of Self-Regulation*
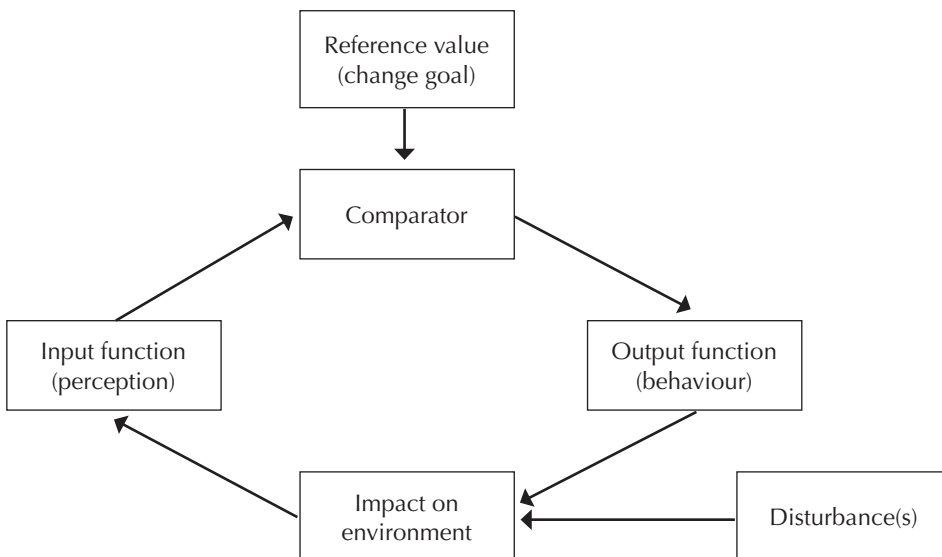
In addition to negative feedback, there are other important concepts that need to be considered if the aim is to understand the change process:

■ The *reference value* or *goal* is what an individual is trying to achieve (e.g., using a seatbelt or not drinking and driving). The origin of this goal is not that important; it can be internal, from friends, or the result of a successful campaign.
■ The *comparator* is a way of labelling the process by which an individual compares his/her current situation or behaviour to the reference goal.
■ Comparison of the current and reference situations implies the need for perception. This is referred to as the *input function* (i.e., it is input for the comparator).
■ The *output function* (i.e., the result of comparing the current situation with a reference situation) is behaviour, in case the behaviour has not been achieved already. If the behaviour has been achieved, then the comparator will not reveal a discrepancy and there is no need for further action.

■ The output function (i.e., behaviour) influences the *environment* in which the individual finds him/herself. This, in turn, is perceived by the individual (i.e., the input function) and the updated situation is compared to the reference goal. This cyclical process continues until the goal has been achieved.

■ A *disturbance* is something that is external to the individual (e.g., other drivers) and can also influence the environment. The comparison process remains the same.

It is also possible that the individual is trying to avoid instead of achieve a goal or situation, in which case steps are taken to enlarge the discrepancy between the current state and the reference state. This, too, is a cyclical process, stopping once a certain desired discrepancy level is reached.

However, in some cases, it may be better to give up a goal[131]. This is referred to as *goal disengagement* and it is not necessarily seen as negative. Indeed, in many cases it can be positive and adaptive (i.e., a good thing) so long as both effort and commitment to the unattainable goal are withdrawn; if only effort is withdrawn but the person still is committed to the goal then he/she will experience distress and futility.

The issue for researchers and practitioners designing a campaign is what to emphasise: goal attainment (be it achievement or avoidance) or goal disengagement? This requires a careful understanding of the aim and target audience of the campaign. To be sure, it might be the case that one wishes to slow down speeders or to stop drinking drivers, and the idea is to have them accept this goal and assist them in achieving it. In this way, the effects of goal disengagement in one area (as part of a public health or lifestyle campaign) may spill over into other areas (traffic safety, driver behaviour). Ideally, parallel and coordinated campaigns in different areas would be run so as to maximise the chances of these outcomes.

Part I Chapter 1 ■ Summary

Despite an impressive reduction in road fatalities over the last decade, road crashes in the European Union still lead to the loss of nearly 40,000 lives each year, corresponding to more than 90 road deaths per one million inhabitants. A large majority of these road crashes can be linked to human behaviour and performance as causal factors. Therefore, it is essential to understand how humans perform tasks and which factors underlie their behaviour, before attempting to influence these elements in view of improving road safety.

Driving a vehicle is a complex task carried out in a dynamic environment. It involves continuous information processing in order to ensure adequate, timely decision-making. Concerning task performance in general, Rasmussen's cognitive-control model of human activity describes three levels of performance, depending on the individual's knowledge of the environment, different interpretations of the available information, and experience with performance of the task: skill-based behaviour (automatic control of routine tasks with occasional checks on progress), rule-based behaviour (pattern-matching of prepared rules or solutions to trained-for-problems), and knowledge-based behaviour (conscious, slow, effortful attempts to solve new problems).

More specifically focused on driving, Michon's hierarchical model of the driving task aligns with Rasmussen's cognitive-control model and helps us understand human behaviour in driving. Michon's model involves three different levels of task performance: strategic, tactical, and operational.

Apart from human control of task performance, other human factors also help to explain road crashes. In general, human factors are linked to a particular situation, and the individual's activity is related to performance of a specific task, taking into account its success or failure as well as difficulties experienced by the actor, risks taken, errors made, or any succession of events leading to an accident.

A fault or failure is frequently said to be the immediate cause of an accident. However, faults and failures are in fact the result of several interacting factors. The single human action that caused the accident (unsafe act) represents the end of a chain of factors leading to a dangerous situation. Reason's taxonomy of unsafe acts distinguishes intended actions from unintended actions, and defines four categories of errors (slips, mistakes, lapses, and violations). According to Reason, violations are different from errors and lapses, since they are deliberate and can be understood in terms of social and motivational factors like the person's attitudes and norms. Road safety campaigns directly address intended unsafe acts (voluntary mistakes and violations) in order to change unsafe behaviour. Furthermore, by providing information and specific knowledge about human behaviour and the driving task, they may also prevent unintended unsafe acts.

Insofar as car driving involves simultaneously performing various subtasks, it requires a high level of attention and concentration by the driver for adapting to the ever-changing driving conditions. From this perspective, the leading causes of accidents can also be linked to insufficient situation awareness, inattention, and/or distraction.

A wide variety of people use the road system to get around – they utilize different modes of transport, have different skills and motivations, and are also different in their individual characteristics and lifestyles. These large differences may, of course, lead them to behave very differently, even in completely identical circumstances. Therefore, understanding road-user variability is a key requirement for road-safety improvement measures, particularly for the design and implementation of road safety campaigns. Road-user categories can be characterized according to the user's role in traffic and to more or less stable individual characteristics (age and sex, experience, personality traits, attitudes, motivation, attention, emotions, etc.). Various models of road-user behaviour have been developed to understand human actions and reactions in the roadway environment. These include driving-behaviour models (motivational models, information-processing models, behaviour models for other road users) as well as systemic approaches to human error management on the roads.

In particular, it is important, prior to designing a campaign, to know and understand which factors influence a driver's behaviour and what motivates a driver to behave safely or not, and also to study the process of behavioural change. Factors related to human behaviour have been incorporated into a number of reference models that predict behavioural intentions and/or behaviour itself.

The Theory of Planned Behaviour (TPB) predicts that intentions affect behaviour. Consequently, if you want to change behaviour, you first have to change behavioural intentions, which in turn depend on behavioural beliefs (leading to attitudes), normative beliefs (leading to subjective norms), and control beliefs (leading to perceived behavioural control).

The Theory of Interpersonal Behaviour integrates normative/social factors into the TPB, that is to say, it includes perceived consequences of a behaviour and habits as predictors of intention (leading to behaviour).

The Health Belief Model is broader than the TPB in that it also includes emotional responses: perceived susceptibility and perceived seriousness. According to HBM, when considering a behavioural change, individuals assess perceived barriers and benefits linked to their own behaviour, as well as their feeling of self-efficacy and internal or external cues for action. The Health Belief Model and Protection Motivation Theory have been widely used in the health domain. Both models focus on perceived threat and different forms of dealing with it. However, PMT also includes the possibility that the response will be maladaptive if the threat is too severe or difficult to avoid.

Perceived threat and perceived susceptibility can also be related to police enforcement and sanctions. Taking this view, the Deterrence Theory states that a person avoids a criminal act if he/she believes and fears that it will result in sanctions. Deterrence can be either specific or general. Specific deterrence is when punishment serves to reduce recidivism, and general deterrence is when the punishment of offenders discourages others from offending. In this framework, law enforcement can prevent violations through general deterrence, and if a violation occurs, it can prevent further violations through specific deterrence.

Whereas the aforementioned theories tend to concentrate on factors affecting behavioural intentions and/or behaviours themselves, other theories view behavioural change as the outcome of information processing. Here behavioural change depends on the depth of information processing (e.g., the central route vs. the peripheral route; see the Elaboration-Likelihood Model), and on whether the attitude is implicit or explicit (see the Associative-Propositional Evaluation Model).

Other theories are concerned with the very process of change. Understanding this process can assist campaign practitioners in designing an appropriate intervention to support the desired behaviour. Such theories include the Transtheoretical Model of Change, which outlines six stages individuals go through before a new behaviour can be firmly established (pre-contemplation, contemplation, preparation, action, maintenance, and termination), and the Theory of Self-Regulation, which states that change is based on the concept of negative feedback. This means that individuals compare their current situation with a goal or reference situation. If a discrepancy is observed, then some action is carried out, thereby minimising the discrepancy.

However, an individual can simply give up a goal for no reason or exchange it for a more realistic and/or achievable one. This is referred to as goal disengagement. The issue for campaign practitioners designing a campaign is to choose what to emphasize in the campaign: goal attainment or goal disengagement. To answer this question, the aim of the campaign and its target audience should be taken into account.

ROAD SAFETY COMMUNICATION CAMPAIGNS

The ultimate aim of a road safety communication campaign is to reduce the number and severity of road crashes by influencing road users' behaviour. As established in the previous chapter, influencing road users' behaviour requires interventions that address those aspects which motivate the road user to behave safely and quit his/her unsafe behaviour. In road safety campaigns, this communication will most often involve the use of media to reach the target audience.

In this chapter, we will present different types of campaigns and social-marketing factors that can be considered in designing a road safety campaign. Emphasizing the importance of learning from past campaigns, we will present some key elements which have been shown to increase the effectiveness of campaigns. For targeting a specific population, we will describe basic techniques for defining the target audience and different methods for segmenting it. We will then discuss elements essential for building targeted campaign messages and the importance of a methodical pre-testing procedure, before describing the features of road safety communication campaigns, particularly the media strategy. Finally, we will stress the importance of evaluation and will present the key elements for conducting an evaluation that yields clear conclusions.

2.1	Campaign types and marketing-strategy factors
2.2	Some key elements for increasing the effectiveness of campaigns: learning from the past
2.3	Target audience
2.4	The message
2.5	Means and features of communication campaigns
2.6	Evaluating campaigns

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2.1 Campaign types and marketing-strategy factors

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There are several types of communication campaigns, including stand-alone campaigns, campaigns combined with other programmes and supportive activities, integrated campaigns, and mid-term and long-term action plans. All of these types of campaigns can be based on the principles of social marketing.

In this section we will describe the different types of road safety communication campaigns and refer to social-marketing principles and strategies that can persuade a target audience to adopt safe behaviours.

Road safety communication campaigns

Public communication campaigns

Road safety communication campaigns are part of the larger category of public communication campaigns. They generally utilize paid advertisements and unpaid media coverage, including public relations, to support the campaign:

■ Paid media include mass media and local media (TV, radio, newspaper, etc.), outdoor media (billboards, campaign feedback signs, etc.), personal media (letters, email, etc.), and face-to-face communication, also called interpersonal communication (presentations, public discussions, etc.).
■ Unpaid or "earned" media coverage includes free publicity, i.e., unintended, unpaid material related to the safety campaign, as well as coverage from public relations efforts (press releases, press articles, radio programmes, TV broadcasts, etc.).

Mass-media campaigns (also called non-personal communication), public relations, and associated publicity are all elements of the broad notion of publicity[132,133,134,135].

Building further on existing descriptions of road safety campaigns[2,3], the CAST consortium adopted a new, general definition:

Purposeful attempts to inform, persuade, or motivate people in view of changing their beliefs and/or behaviour in order to improve road safety as a whole or in a specific, well-defined large audience, typically within a given time period by means of organised communication activities involving specific media channels often combined with interpersonal support and/or other supportive actions such as enforcement, education, legislation, enhancing personal commitment, rewards, etc.[4]

In this manual, we focus on campaigns that involve more than just mass-media communication.

We state that communication campaigns on road safety can have at least five main goals:

1   To inform the public about new or modified laws.
2   To improve knowledge and/or awareness (of new safety features in vehicles, risk, etc.) and of appropriate preventive behaviours.
3   To change underlying factors known to influence behaviour.
4   To modify unsafe behaviour or maintain safety-conscious behaviour.
5   To decrease the frequency and severity of accidents.

At this point in time, it is clear that road safety communication campaigns are rarely conducted on a stand-alone basis. They are often combined with other supportive activities and/or integrated into a more comprehensive approach.

Combined campaigns and integrated programmes

Combined campaigns

A communication campaign is not the only intervention that serves to improve knowledge or change beliefs and behaviour. Other activities such as enforcement, education, legislation, enhancing personal commitment, incentives, etc., are often added to the communication campaign in order to increase its effectiveness.

–   **Enforcement** can be used to support the campaign message. Law enforcement, particularly high-visibility enforcement, can raise audience awareness about the campaign theme. Enforcement upholds society's expectations and standards, and imposes sanctions when laws are broken. The threat of these sanctions is what persuades most road users to comply with the rules (e.g., sanctions, point systems or demerit point systems, etc.). Enforcement discourages people from repeating behaviour that has already earned them a sanction, and thus helps in creating a useful deterrent and in encouraging people to develop habits of compliance.
–   **Legislation** concerns the adoption of new laws or the modification of existing laws. The campaign can inform people about new or modified laws, or prompt them to obey the law. Legislation is the most basic mechanism for attempting to influence road-user behaviour; it has a declarative effect (setting standards) and a deterring effect (sanctions).
–   **Education** can be used to communicate information and raise awareness of a specific issue. It helps people develop knowledge, skills, and changes in attitude (e.g., educational programmes, driver's training, etc.) and promotes the development of internal and informal social controls.
–   **Reinforcement** can be used to prompt people to adopt a safe behaviour. It focuses on specific behaviours and the external factors that influence them; its purpose is mainly to encourage safe behaviours rather than discourage unsafe ones. Reinforcement is used here as an umbrella term to include incentives, commitment, rewards, and other behaviour-influencing techniques such as prompts and campaign feedback.
■   Commitment: the campaign can prompt road users to commit themselves to a law-abiding behaviour.

■ Rewards: a reward system can be used as an incentive for people to adopt the safe behaviour (e.g., key-chains or other gadgets can be distributed to car occupants who wear their seatbelt, etc.).

– **Engineering improvements** can be either infrastructure or vehicle-based. These may be used to inform road users about safe behaviours or directly steer their behaviour.

■ Infrastructure: the campaign can interact with recent infrastructure measures, e.g., a campaign on new 30 km/h zones can be combined with adaptation of the road infrastructure in those zones, in order to make people aware of the reasons why the new infrastructure is being implemented.

■ Technological innovations or enhancements, e.g., driving aids such as electronic stability control (ESC), individual breathalysers, anti-collision systems, etc.

Whether a communication campaign is combined with supportive activities or not, it can be integrated into a more comprehensive approach. In this case, the campaign becomes part of an integrated programme.

Integrated programmes

Using integrated programmes involves integrating and coordinating many different communications to disseminate a clear and consistent message about a particular type of problem behaviour (e.g., lack of seatbelt usage) or about a range of issues (e.g., responsible driving), usually over a longer time frame (up to several years). Such programmes can involve collaboration between several organisations likely to influence the road-safety issue addressed by the programme (see Box 2, the THINK! example).

Box 2 ■ Integrated Campaign Approach: the THINK! example[136]

A good example of the application of an integrated campaign is given by the UK Department of Transport. This agency tried to find the most effective approach for changing the road safety behaviour of teenagers, who are notoriously difficult to influence given their traditional resistance to government messaging and their characteristically adolescent feeling of invincibility.

The UK government has the objective of reducing road deaths and serious injuries by 40 percent (50 percent for children) by the year 2010 (using the average for 1994-98 as the baseline). To achieve this difficult objective, the UK Department of Transport developed an "umbrella" campaign brand, called "THINK!"

The main objectives of the THINK! campaign were to:
■ work toward the goals of road-casualty reduction by the year 2010 that were set out in the government's policy strategy document "Tomorrow's roads: safer for everyone".
■ use all available marketing tools for getting road-safety messages across effectively and meaningfully.
■ pull together a wide range of road safety messages under a single concept.
■ communicate specific advice to road users, while impressing on all the need to THINK! while using the road.

■ help establish a year-round message under a new road safety brand.
■ encourage new partnerships to adopt the brand when promoting road safety.

Two key factors in achieving these objectives are improved road-user behaviour and acceptance of engineering and enforcement initiatives that increase road safety. In the "THINK!" campaign, an integrated media plan was developed for delivering the campaign, using a mix of TV and cinema advertising backed by outdoor advertising. This conventional media mix was augmented by viral marketing involving the release of an unbranded version of the ads prior to TV launch. This generated over 200,000 viewings in a few weeks and proved to be particularly effective at influencing "early adopter" teens, a group that often influences peers as to what clothes to wear, what music to listen to, and what attitudes to have in general. Targeting this opinion-forming group promoted the spread of the message teen-to-teen before the mass launch, increasing campaign effectiveness even further.

It is an example of how this kind of integrated approach can be used to bring about consistency of communication across a range of issues. This umbrella brand also facilitates integration of national and local campaigns, in collabora-tion with local and regional partners such as LARSOA[137] (a national road safety organisation that represents local government road safety teams across the UK), which conduct the local and regional components of the road-safety communi-cation campaigns.

The authors of the "THINK!" campaign have no doubts about the advantages of using this kind of integrated approach, in the light of the positive outcome of the campaign, which *"after the last advertising burst showed a 56% spontaneous advertising recall and 76% prompted awareness. 95% said the ad made them think again about being careful on the roads and 91% said it made them realise it could happen to them. After the campaign ran, there was a 22% drop in deaths and serious injuries (KSIs) among 11-16 year-old pedestrians in both September and October 2005."*

Based on these positive outcomes, the authors concluded, *"Integrated campaign planning works. In this case, a viral campaign successfully 'seeded' early adopter opinions, which enabled the campaign to get off to a flying start."*

Moreover, integrated programmes may combine several supportive activities that supplement and are consistent with the media communication[138] (see Boxes 3 and 4).

Cooperation between organisations, as well as coordination of programmes, can be very fruitful. Integration of different agencies and programmes can be organised either vertically or horizontally. *Vertical* integration means, for example, that a given campaign is implemented on different scales by local, regional, and national authorities *(*see Box 3). *Horizontal* integration means that the campaign is implemented on the same organisational level but in different sectors. Alliances can then be formed between similar organisations. For example, the campaign can

be implemented by the National Ministry of Transport and the National Ministry of Health.

Box 3 ▪ STEP: Selective Traffic Enforcement Programme[139]

> The STEP model combines enforcement and education with public communication campaigns. It is an extremely cost-effective method for reducing road fatalities and casualties. Nevertheless, it does not eliminate the need for continuous monitoring and enforcement activities throughout the year.
>
> The STEP model may play a coordinating role in developing and implementing enforcement, education, and communication strategies.
>
> Effective strategies may be developed and implemented by:
> –   Providing consultations to groups at the regional and local levels;
> –   Coordinating enforcement, education, and communication campaigns;
> –   Offering advice on safety priorities to senior management of police agencies as well as to regional and municipal governments.

Moreover, integrated programmes can also consist of a number of related engineering and technology measures (e.g., development of driving aids) that all adhere to a holistic view (see Box 4). Such an approach involves an action plan that unfolds over several years and that generally encompasses a number of themes and related measures at different levels.

Box 4 ▪ The holistic view taken by the Transport Accident Commission[140]

> To address the problem of lives being lost and serious injuries occurring on Victoria's roads (Australia), in 1989 Victoria Police, VicRoads, and the Transport Accident Commission (TAC) adopted a concerted, integrated approach to accident prevention.
>
> The approach included:
> –   A significant boost in enforcement, targeted to speeding and driving under the influence of alcohol.
> –   High-profile, hard-hitting mass-media campaigns to signal a need for change and help set the public agenda.
> –   A sustained focus on key issues such as drinking and driving, speeding, fatigue, and young drivers.
> –   Close coordination of enforcement and publicity efforts.
> –   Public education programmes directly supporting police enforcement efforts.
> –   Coordination of the efforts of various state and local road-safety agencies.
> –   Emphasis on using research to guide the development of initiatives (e.g., engineering and technology measures) and evaluate their effectiveness.
>
> TAC also adopted a more aggressive approach to public education by addressing the key causes of road crashes – the attitudes and behaviours of road users.

This integrated approach has been accompanied by a near halving of Victoria's road-fatality toll since 1989, with a corresponding drop of 32% in serious injuries.

Since 1989, the TAC's accident-prevention strategy has evolved into a multi-faceted programme covering a number of road-safety issues. This strategy has allowed key problems such as the inexperience of young drivers, drinking and driving, speeding, and fatigue, to be tackled in an effective and integrated manner.

The key approaches adopted by the TAC were to:
–   Bring key safety issues into public discussion.
–   Promote awareness that "this could happen to me" through the use of emotional, realistic portrayals of road crashes and their consequences.
–   Publicize the introduction of new enforcement technologies.
–   Work on improving the level of effort and predictability of police enforcement efforts.
–   Reinforce the perception of the increased risk of detection.

Whether or not the communication campaign is combined with supportive activities, whether or not it is part of an integrated programme, its design and implementation will mostly be based on sound social-marketing strategies.

Social marketing

What is social marketing?

Social marketing[138] is defined as "the use of marketing principles and techniques to influence a target audience to voluntarily accept, modify or quit behaviour for the benefit of individuals, groups or society as a whole, and marketing strategy factors which includes marketing mix". Thus, the objective of social marketing is to influence and change social behaviours in the interest of the target audience or society in general. It may also seek to enhance knowledge and/or change attitudes as a means of influencing behaviours.

Social marketing is based on a number of concepts and strategies that are also found in standard product marketing, but there are nevertheless a number of important differences. The UK's National Social Marketing Centre (NSMC, www.nsms.org.uk) has tried to summarise the main characteristics and differences between social marketing and standard product marketing. These differences are reported in Table 4.

Table 4 ■ Main differences between standard product marketing and social marketing

	Standard product marketing	**Social marketing**
Primary aim	Sales, profit, and shareholder value	Achieving a "social good"
Funding	Investment and sales	Public funds (taxes, donations), private funds
Accountability	Privately accountable, e.g., shareholders and directors	Publicly accountable
Measure of performance	Profits and market share	Often complex and longer term
Behavioural goals	Often clearer to define and more immediate with stronger short-term measures	Commonly more complex and challenging – sustained action over the longer term
Products or services	More clearly defined, less complex to market	Often focused on addressing complex, challenging, or controversial behaviours
Targets and audiences	Often accessible	Often more risky
Culture	Commercial – risk-taking culture often evident	Public sector – risk-adverse culture often evident
Decision-making	Hierarchical decision-making widely assumed	Participative decision-making valued
Relationship basis	Commonly competitive	Often based on building trust

Social marketing is to be considered as a global strategy. It provides a framework into which campaigns can be integrated.

Marketing-strategy factors

In the social-marketing approach, road safety communication campaigns can use the marketing-mix tool. The term "marketing mix" refers to a mix of many elements, such as product planning, pricing, branding, distribution channels, personal selling, advertising, promotions, packaging, display, servicing, physical handling, and finally fact-finding and analysis[141]. These ingredients can be grouped into the categories known today as the 4 P's of marketing, namely Product, Price, Place, and Promotion[142]. The concept of marketing mix is centred around the customer or target audience[138]. In the context of this manual, it is useful to add a fifth element relevant to road safety campaigns: Possible supportive activities (see Figure 22).

Figure 22 ■ Scheme of the social-marketing strategy
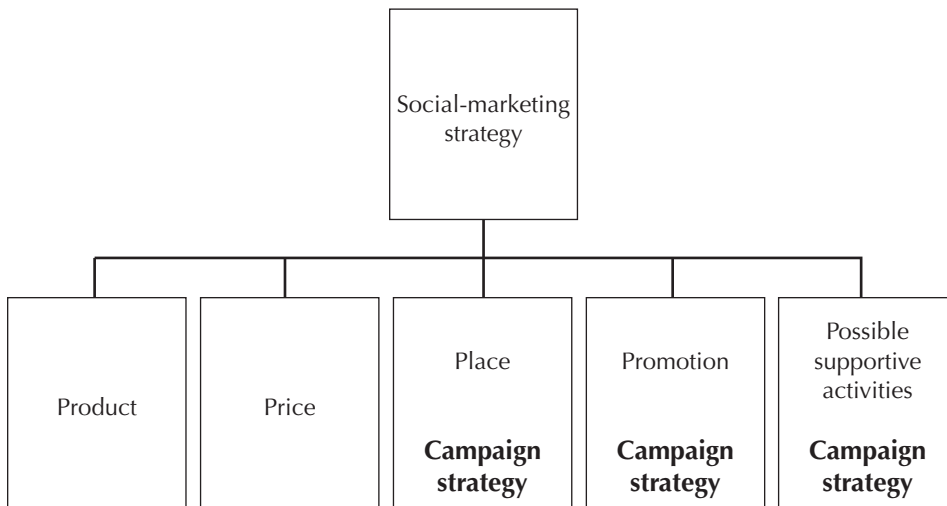
According to this model, there are five P's that are relevant for a social-marketing strategy. The first one is *Product*, which in social marketing is mainly related to behaviour and not so much to material goods or commodities. As it relates to road safety campaigns, the product is the behaviour that the target audience should adopt – that is to say, safe driving behaviour – and its associated benefits (including any related tangible objects and services). The safe behaviour can be regarded as an outcome or product for society. When the objective is for the individual to consider a change from an unsafe behaviour to a safe behaviour (e.g., change from drunk driving to sober driving), the lower accident risk associated with it should be a positive outcome – the product.

The central aim is to present the product (safe behaviour) in a way that motivates the target audience to adopt it and to explore opportunities for tangible objects and services that will support behavioural change. Once it is defined, the product itself (e.g., driving at lower speeds) remains the same, but the way it is presented may change according to the predilections of the target audience (e.g., reducing speed may be presented as "cool, hip behaviour" to young male drivers while being presented as "responsible, mature behaviour" to older drivers).

Three levels of product can be distinguished: the *core product*, the *actual product*, and the *augmented product*[138] (see Figure 23). These three levels represent a platform for conceptualising and designing the product strategy:

1 The *core product* corresponds to the benefits associated with the safe behaviour. It answers the question, "What is in it for the individual who adopts the safe behaviour?" or stated differently, "What benefits will the audience experience when they perform the safe behaviour?" (e.g., not drinking and driving reduces the likelihood of having an accident, so it lowers the probability of death and injury). Therefore,

decisions about the core product focus primarily on identifying which potential benefits should be stressed. This entails a review of the perceived benefits of the safe behaviour and the perceived cost of the unsafe behaviour.

2 The *actual product* is the safe behaviour itself, i.e., the behaviour required to achieve the benefits identified as the core product. Additional components at this level may include brand names, sponsoring organisations, and endorsements (e.g., keep your blood alcohol content below the legal limit if you want to drive, do not drive if you are drunk). These decisions are important because they affect the credibility and appeal of the campaign.

3 The *augmented product* corresponds to the tangible objects and services, promoted with the safe behaviour that will help the target audience perform this behaviour. These can be new or improved objects and services that make the campaign more tangible, provide encouragement, remove barriers, or sustain behaviour (an example of such an object is a breathalyser; an example of a service is free taxi rides on New Year's Eve).

Figure 23 ■ *Three product levels in social marketing*[138]

Augmented product
tangible object and service to support behaviour change – e.g., road signs that gives feedback about the driver's speed

Actual product
safe behaviour – e.g., strictly observe the speed limit

Core product
benefits of the safe behaviour – e.g., less risk of having an accident
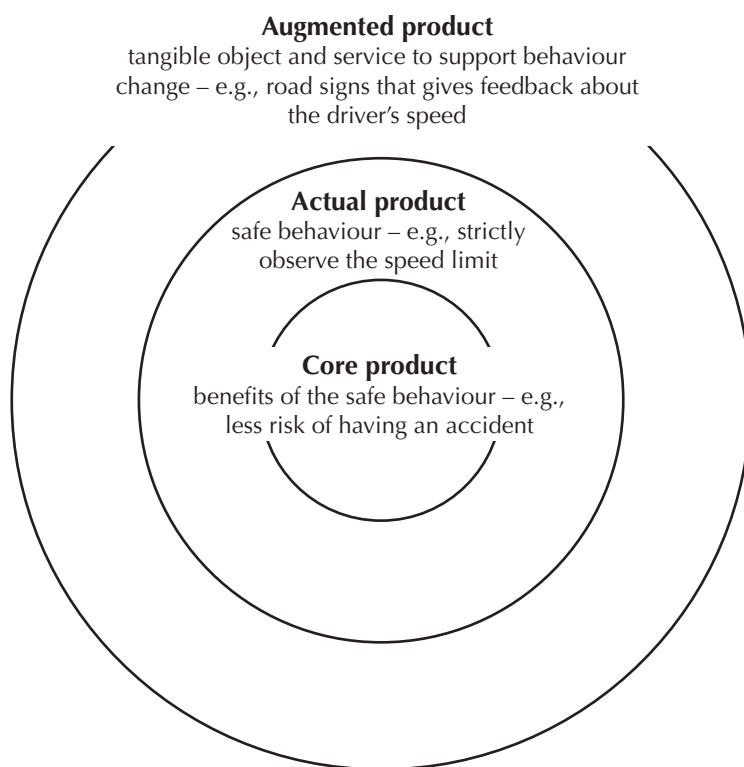
The decisions made at each product level will determine the *positioning* of the product in the mind of the target audience; in other words, the decisions will modify the target audience's knowledge and beliefs, and/or introduce new knowledge and beliefs regarding both the problem behaviour and the safe behaviour.

The second construct described in the social-marketing model is *Price*, which is the "cost" that the target audience associates with adopting the safe behaviour. The use of the term "price" in social-marketing is different from that in economics or standard product marketing, where price is either a market price or a "societal price" that includes costs to individuals or society.

The price includes monetary and non-monetary costs:

- Monetary costs: out-of-pocket costs for purchasing tangible objects and services that are needed to adopt the safe behaviour (e.g., cost of a car seat for a child).
- Non-monetary costs associated with adopting the safe behaviour: time, effort, and energy (e.g., installing the car seat); psychological risks and losses associated with the behaviour; and physical discomfort or loss of pleasure (loss of "sportive driving pleasure" when keeping to speed limits).

The meaning of monetary and non-monetary costs has to be viewed from the individual perspective. Costs in terms of time, accidents, and even loss of comfort, can be measured from society's point of view and should not be confused with actual costs incurred, for example, in case of an accident.

When a person adopts an unsafe behaviour, the perceived benefits of the problem behaviour are more heavily weighted than its perceived costs. For someone to quit behaving in the unsafe way, the perceived costs of the behaviour should have more weight than its perceived benefits (see Figure 24).

Figure 24 ■ Price and Product: the perceived costs of the problem behaviour should outweigh its perceived benefits (adapted from Kotler et al.'s cost balance, 2002)[138]

**Problem behaviour:
perceived benefits of speeding**

Monetary benefits
■ Time is money: a gain of time is a gain of money

Non-monetary benefits
■ Sportive image
■ Feeling of freedom

**Problem behaviour:
perceived cost of speeding**

Monetary costs
■ Risk of getting fined (sanction)
■ Increased fuel consumption
■ Risk of medical/repair payments due to accidents

Non-monetary costs
■ Increased risk of accidents (non-compensated discomfort and pain)
■ Risk of losing points on driver's licence (sanction)

Result: The chosen behaviour will be the safe behaviour

The third construct is *Place*, which describes where and when the target audience will perform the safe behaviour, acquire related objects and receive associated services.

The objective is to develop place strategies to make performing the safe behaviour more accessible, convenient, and pleasant than the problem behaviour, for example, by coming closer to the location of the unsafe behaviour (e.g., "designated driver" operations in night clubs), making the safe behaviour more engaging (e.g., extending operating hours of public transportation), or being present at the place and moment of decision-making (e.g., being present in cafés and bars to deter people from driving after drinking).

The fourth construct described by the social-marketing model is *Promotion*, which is the persuasive communication designed and delivered to highlight the first three P's: *Product*, *Price*, and *Place*. Promotion is the tool we rely upon to ensure that the targeted individuals know about the product, believe they will experience the stated benefits and are motivated to act, in other words to adopt the safe behaviour.

Two major components of promotion are the creation of message(s) and the selection of media channels.

■ *Creation of message(s)* concerns what will be said (message content), why it will be said (message strategy), and how it will be said (message-execution strategy) [1].

■ The message strategy is based on a creative brief describing the key message, the target audience, the communication objectives, the benefits provided by the product, additional benefits and features associated with the product, price and place, openings to guide media planning (i.e., the moment and place where the target audience is most likely to receive the message), and the context (e.g., European road-safety targets). These elements, amongst others, will have an impact on what message should be created.

■ The message-execution strategy has to do with how the message is expressed, that is, the style, tone, wording, and format chosen for the message. The execution strategy will be planned to appeal to the sensitivities of the target audience.

■ *Media channel selection* has to do with choosing *where*, *when,* and *by whom* the message will be delivered (see *Means and features of communication campaigns*, pp. 137-149).

■ *Where:* choice of media channels (advertising, PR, printed materials, promotional items, etc.) and media vehicles [2] (e.g., specific TV shows, radio programmes, magazines, etc.).

■ *When*: timing decisions are based on the moment when the target audience is most likely to be reached and influenced by campaign messages (e.g., the message can be printed on a sticker glued behind the steering wheel).

■ *By whom*: choice of possible mediators who will transmit the message to the target audience (spokespersons, organisations, peer groups, etc.), and the profile of the sender, etc.

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1   For a more detailed discussion about the construction of messages, see *The message*, pp. 123-136.

2   A media vehicle can be defined as: "a specific newspaper, magazine, radio station, television programme, outdoor advertising location (…) that can be employed to carry advertisements" (Retrieved February 1, 2008, from http://www.marketingpower.com/mg-dictionary.php)

Figure 25 ■ Marketing mix: using the five P's to make the audience give up the problem behaviour and adopt the safe behaviour (adapted from Kotler et al.'s cost balance, 2002)[138]

Problem behaviour: perceived benefits of speeding

Monetary benefits
■ Time is money:
a gain of time is a gain of money
Non-monetary benefits
■ Sportive image
■ Feeling of freedom
…

Safe behaviour: perceived cost of keeping to speed limits

Monetary costs
■ Time is money, so loss of time means loss of money

Non-monetary costs
■ Loss of sportive image
■ Loss of driving pleasure
…

Problem behaviour: perceived cost of speeding

Monetary costs
■ Risk of getting fined (sanction)
■ Increased fuel consumption
■ Risk of medical/repair payments due to accidents

Non-monetary costs
■ Increased risk of accidents (non-compensated discomfort and pain)
■ Risk of losing points on driver's licence (sanction)
...

Safe behaviour: perceived benefits of keeping to speed limits

Monetary benefits
■ Fuel economy
■ Less risk of accidents so no increase in insurance premiums

Non-monetary benefits
■ Less risk of accidents
■ No risk of losing points on driver's licence
...

Potential strategies:
■ **Increase perceived costs of problem behaviour and perceived benefits of safe behaviour**
■ **Lower perceived benefits of problem behaviour and perceived costs of safe behaviour**

Product enhancements	■ Benefits: further feeling of security, "state of mind"
	■ Driving aids: speed limitation
Pricing tactics	■ Monetary benefits: rewards, no fine, less gasoline used up
	■ Non-monetary benefits: less risk of crash
Place tactics	■ Variable message billboard on highway
Promotional tactics	■ Framing: negative or positive message. e.g., fear appeal: give statistics on accidents
	■ Interpersonal communication, e.g., use testimonials
Possible supportive activities:	■ Enforcement (radar control, etc.)
	■ Education
	…

The fifth P construct is *Possible supportive activities*, something that is often regarded as part of the campaign strategy. The purpose of supportive activities is to emphasize Product, Price, and Place, and to accompany and reinforce Promotion. They can reduce the perceived cost of the safe behaviour and increase the cost of the unsafe behaviour, thereby raising the road safety campaign's probability of success. More specifically, strong enforcement will influence the price balance in favour of the safe behaviour, by increasing the offender's subjective and objective risk of getting caught and having to pay a fine in case of problem behaviour.

The five P's of the marketing mix will be used to persuade people to stop executing the problem behaviour and adopt the safe behaviour (e.g., keeping to the speed limit). Applying these principles will serve to increase the perceived costs and lower the perceived benefits of the problem behaviour, and vice versa for the safe behaviour (see Figure 25). This will tend to tip the balance in favour of the safe behaviour.

Conclusion

Road safety communication campaigns may or may not be combined with supportive activities, and they can also be integrated into an even broader global approach, a so-called integrated programme. In order to influence the target audience's knowledge, beliefs, and behaviours, the social-marketing model provides a frame of reference to guide in the design and implementation of a campaign.

2.2 Some key elements for increasing the effectiveness of campaigns: learning from the past

Learning from rigorously evaluated campaigns, whether they had effects or not, is absolutely essential if progress within this field of research is to be made. Hence, the opportunity to accumulate knowledge about risk communication and beliefs and/or behavioural change has been a recurrent preoccupation of road safety researchers and practitioners. The main goal of research efforts is to base decisions on shared facts and knowledge in order to take advantage of successful elements of previous campaigns and also to avoid past mistakes. There are three main approaches to gathering knowledge beyond the private expertise of specialists: theoretical approaches (see *Road safety and human behaviour,* pp. 29-80), qualitative reviews focusing on how, why, and in what way campaigns have been carried out (descriptive studies), and systematic reviews using a rigorous scientific method (meta-analyses).

In this section, both qualitative reviews and systematic studies will be discussed. The reader will find in each sub-section a description of the methods used together with their advantages and disadvantages. Furthermore, the key elements identified as having contributed to the success of a road safety campaign will be presented. The section will end with a discussion about possible collaboration on a Europe-wide level and will present some campaigns that have been selected as representing the "best practices".

How to identify key elements of past road safety communication campaigns

Both qualitative research (such as descriptive studies) and quantitative research (such as meta-analyses) provide useful information about key elements of successful road safety communication campaigns. Having a combined qualitative and quantitative approach is essential in compiling a comprehensive overview of what has been done in the past.

Descriptive studies

A qualitative approach to research on road safety communication campaigns consists of studying narrative descriptions and observations. After defining descriptive studies, we will present some main conclusions drawn from such studies.

What are descriptive studies?

Descriptive studies are focused on what, how, or why something is happening. This category includes comparative descriptive studies in which data are collected to describe and compare two or more groups of participants or entities. The results of descriptive studies are mainly verbal (i.e., they relate meanings, concepts, definitions, characteristics, and symbols of things observed) rather than numerical, and the description usually provides an in-depth understanding rather than an array of measurements.

Generally, the kind of descriptive study of interest when designing a campaign synthesises the results of several programmes (e.g., literature review) in order to find useful trends that can provide campaign practitioners with important information, not only on specific processes to implement, but also on general characteristics of campaigns.

A descriptive study that leads to reliable and useful information must have a well-planned procedure. This kind of study starts with an initial selection of previous publications and then goes on to organise the data into meaningful categories or variables; in this vein, taking into account the level of expertise of the publications' authors can avoid a possible sampling bias. The qualitative and quantitative variables chosen for study depend upon the explicit and implicit goals of the campaign. However, when dealing with large samples, the results are usually displayed in charts and tables to reduce the complexity of the data and to give a better overview. If earlier descriptive studies are analyzed, they should be as transparent as possible, including explicit descriptions of the method used for selecting, coding, and reporting the results. In a simple, practitioner-focused framework for assessing the rigour of qualitative research, Pawson (2001)[143] defined the main data to extract when conducting descriptive studies:

- Author, year of publication, place.
- Target group, age range, setting.
- Intervention aims and content.
- Nature of the programme: educational, environmental, legislative, etc.
- Stakeholder alliances involved in programme implementation.
- Methodology employed.
- Outcome measures used.
- Summary of important results.
- Rating of the "quality of evidence".

Results of descriptive studies on road safety communication campaigns

Descriptive studies can provide valuable information that may be useful when designing road safety communication campaigns[144,145,146]. However, at present there are relatively few studies that have used this method to assess the effects of campaigns. In this section, three studies will be presented, one conducted by an OECD group (Organisation for Economic Co-operation and Development), one by the Global Road Safety Partnership (a programme sponsored by the International Federation of Red Cross and Red Crescent Societies) and one conducted by Woolley (Transport Systems Center, University of South Australia).

OECD study (1993)

A group of OECD experts performed a descriptive study in which they compiled national and international data, cross-analyzing and synthesizing 16 studies and 14 variables[147]. The conclusions are meaningful but clearly limited by the small size of the sample. This conventional type of literature review is largely grounded in the authors' high level of expertise, which presumably corrects some bias in the interpretation of the results. The OECD experts stimulated a discussion about the need for a marketing strategy specifically planned for road safety, as well as about which methods should be used. They inquired into the use of marketing principles and

explained how social marketing can be employed as a tool to elaborate road-safety strategies and to help campaign designers. They stressed the strategic and systematic use of social marketing and marketing principles, the formulation of a marketing strategy, and the importance of having a social-marketing plan based on an analysis of the situation. Other points emphasized were the division of the population into target groups and segments, and the laying out of clear objectives regarding the progress of work and the evaluation of results.

A manual by Global Road Safety Partnership (2005)

The Global Road Safety Partnership produced a manual based on a workshop dealing with the implementation of good practices in road traffic safety[148]. Based on their "good practices" in road safety, which later became recognized worldwide, they make recommendations on the different steps needed to carry out a road safety communication campaign.

The manual consists of six chapters, each focusing on a road safety theme where experience has shown that certain specific measures and actions could lead to positive outcomes as far as reducing the number and severity of road crashes is concerned. The chapters cover the following topics: campaigns and enforcement, awareness and partnership, crash databases, treatment of black spots, road design and speed management, health and road safety, and on-site first aid. Each chapter includes an analysis of the effectiveness of road safety programmes, examples from countries where good results have been obtained, and recommendations on how best to proceed with implementation, planning, and execution of campaigns. These recommendations include:
– Using an underlying theoretical model or evidence from crash databases.
– Defining the problem and crafting a well-chosen slogan and message.
– Defining the target audience and finding a means of reaching it (TV spots, hand-outs, radio interviews, school activities, disco activities for teenagers, gas stations, school districts, etc., depending on the target audience).
– Involving all stakeholders in campaign activities, especially police and other enforcement agencies, whose participation is crucial.
– Planning for an information-dissemination period followed by enforcement.
– Planning and implementing year-long campaigns, with four or six messages per year and inclusive planning for enforcement.
– Ensuring that the campaign gets funding from the government.
– Seeking help from national road-victim organisations that can offer wisdom from actual experience.
– Planning an evaluation to measure the effect of the campaign in view of improving it in the future.

The study by Woolley (2001)

Adopting a descriptive approach, Woolley studied best practices with mass media, and which of these practices are considered the most suitable for mass-media road safety campaigns[149]. Several key elements that should be taken into account when conducting a road safety communication campaign included the following points:

– Social-marketing strategies are more suited to this context than product-marketing strategies (product advertising). Indeed, product advertising cannot understand the mechanisms of behavioural change.

– Public-health campaigns should not consider the audience as passive; in fact, the audience selects what information to integrate.

– Motivation plays an essential role in behaviour, which explains why attitude change is not necessarily followed by a change in behaviour. Road safety communication campaigns should rely on theoretical models that include the determinants of behaviour and explain how they interact. Woolley stresses that such campaigns should focus on social norms and beliefs.

– Advertising is not easy to evaluate, because the frequency and the magnitude of its impact, and the interaction between these two, are difficult to measure. Advertising is traditionally evaluated according to the target audience's reachability, adstock (period of time that an advertisement continues to have an effect after the end of the advertising period), wearout (loss of an advertisement's effectiveness with repeated exposures), as well as habituation and tedium (boredom). The following principles are applicable:

- A new stimulus leads to uncertainty and tension.
- It is presumed that adstock has a half-life of five weeks.
- Because road safety communication campaigns promote well-known behaviours, which are often not actually exhibited by the audience, advertising in this field is subject to wearout faster than product advertising. The maximum effectiveness is reached between 3 and 10 exposures; wearout begins between 10 and 20 exposures.
- Repeated exposure leads to familiarity and likeability, which triggers habituation first, then boredom. Habituation sets in early and occurs with socially meaningful stimuli, whereas tedium takes over later; their combination is likeability, the curve of which has an inverted U-shape.

– The campaign's exposure strategy should be carefully planned, using a concentration strategy over days or weeks, a continuity strategy with consistent intensity over a longer period of time (a frequently used approach), or another approach known as 'flighting', where periods of high-intensity repetition alternate with periods of no advertising (for further discussion of exposure variables, see *Means and features of communication campaigns*, pp.137-149).

– Strong emotional appeals, including fear or appeals to negative consequences should be used with some caution (see *The message*, pp. 123-136).

– Finally, road safety communication campaigns should:

- Use both theory and research in their design.
- Rely on realistic and achievable objectives.
- Combine media communications with other actions.
- Use several forms of media.

Meta-analyses

Learning from previous experiences can often be accomplished by reviewing publications within the concerned area of interest. To answer various questions about the key elements of successful campaigns, it might be necessary to base decisions on a combination of past studies. In order to achieve this, a meta-analysis can be used.

What is a meta-analysis?

Meta-analysis is an analytical technique widely used in various fields of research. The technique can be described as a comprehensive, systematic, and quantitative review of past empirical research on a specific topic, and might involve anything from epidemiological studies to evidence-based medicine, or educational research to the complex field of road safety communication campaigns. Meta-analyses examine quantitative studies; in particular, they calculate effect-size statistics in order to draw an overall conclusion from the various studies on the topic examined. *"Meta-analysis is a quantitative method of combining findings across studies on the same subject even when the studies have used different measures to assess the same dimension. Its specific value is to correct statistical and measurement bias that cause artifactual variations in effects of size and correlations across studies. In a case where small effects are expected it allows the observation of regularities that could not be detected in just one investigation"* (Hunter & Schmidt, 1990, p. 6)[150].

A meta-analysis is usually carried out at two levels: the first tries to establish the main overall effect, and the second aims to identify factors contributing to this main effect. For instance, a reduction in accidents might be the main overall effect, and the contributing factors might be the time and duration of the campaign.

A meta-analysis starts with a review of the literature and then goes on to select a number of studies that measured the effects of a road safety communication campaign (see Box 5). After that, several steps are needed to decide which studies should be included in the final analysis. Insofar as a meta-analysis looks for effects, the first step is to select studies that include evaluations both before and after the campaign. The second step is to determine whether the selected studies include enough statistical information for the analysis. The information required from each study includes the sample size (how many individuals are included in the study), the mean values, the standard deviation (measure of statistical dispersion), and the p-values (indicating whether the results were due to the experiment or merely occurred by chance).

Box 5 ■ Qualitative and quantitative criteria for conducting a meta-analysis

Qualitative criteria:

–   All studies should have used similar, comparable (if not the same) methods and procedure.
–   The target population should have comparable characteristics.
–   The data set should be free of bias, including biases in the selection/exclusion criteria.

Quantitative criteria:

–   A reanalysis must be conducted with the raw data from all studies in the sample, in order to verify the original results (to establish their elaboration quality) and provide a new database of the sample (that merges all studies taken into account).

– Once the selection criteria are chosen, all eligible data is included. If a datum is excluded, even if this decision is supported by a logical reason, this can reduce the validity of the results.

– As a summary of studies, a meta-analysis often cannot identify the causes of differences in the results obtained. The differences may be due, for example, to chance, methodological inadequacies, or systematic differences in study characteristics (mainly in cases when there are few studies in the sample).

As a consequence of the procedure described in Box 5 many studies have to be discarded because they fail to provide enough information. In some meta-analyses, further selection criteria are applied; for example, only studies that had a control group are included (a group similar to the treatment group but that was not exposed to the campaign). This process reduces the number of studies included in the meta-analysis. Once the selection of studies has been completed, relevant data are then extracted using a predefined procedure. The data are entered into a database and analysed. The results of the first-level analysis show the overall, average effect of the campaign. A combination of different outcomes may be used as a measure of impact, for example behaviour, attitudes, risk perception and knowledge[2], although some meta-analyses use road crashes as a distinct measure (GADGET, INFOEFFEKT, and CAST) [4,132,151,152].

In addition to accidents, the meta-analysis conducted in the CAST project included behavioural outcomes along with some specific non-behavioural measures such as risk perception, knowledge and attitudes.

To assess the factors contributing to the impact of a campaign, further analyses can be carried out. In some cases (INFOEFFEKT and CAST), a regression analysis was conducted by inputting various items as the independent variables and then using accidents, or any other of the distinct measures, as the dependent variable. In the INFOEFFEKT project, measures such as country, theme of campaign, year of publication, type of campaign, etc., were included as independent variables. The results from first- and second-level analyses enable researchers to determine, respectively, whether or not the campaign had an effect, and if so, the factor or factors that account for that effect.

Results of meta-analyses of road safety communication campaigns

In the field of road safety communication campaigns, several meta-analyses have been carried out in an attempt to identify key elements that lead to effective campaigns. We will present the results of four studies: the Elliott study and the GADGET, INFOEFFEKT, and CAST projects.

The Elliott study (1993)

Elliot (1993)[2] conducted a meta-analysis of over 80 road safety communication campaigns, with 175 effect size measures. This meta-analysis offered some important conclusions on what differentiates successful from unsuccessful campaigns:

– Campaigns that include publicity and/or enforcement are more effective than campaigns without these combined measures.

–   Campaigns that use a theoretical model (see *Road safety and human behaviour,* pp. 29-80) are more effective than those that do not.

–   Campaigns that are based on prior research (qualitative and/or quantitative) are more effective than ones that are not.

–   Campaigns with a deliberately persuasive intent are more effective than campaigns with an informative (educational) intent.

–   Campaigns that use an emotional appeal are more effective than ones that take a rational/informative approach.

–   Campaigns requesting/instructing a specific behaviour are more successful than those that are more general.

–   Qualitative research on the different components of a campaign (message, target group, communication modes, etc.) is strongly associated with increased impact (effect sizes) and is more useful than quantitative research.

However, these conclusions are questionable because they came from self-reported measures (awareness, knowledge, attitudes, motivation, behaviour) and from observed behaviours of road users. Moreover, most of these campaigns "are not evaluated or else evaluated in a primitive form such as post-only and frequently awareness of the campaign materials" (p. 70)[2].

The GADGET project

The GADGET project, which focused on road crashes[132], is another meta-analysis that provided important insight into the key elements of successful road safety communication campaigns. This project selected a group of road safety campaigns that presented at least one evaluation result and were about any theme concerning drivers, in-car safety devices, and the car itself, and were conducted on any scale: national, provincial (or regional), local or citywide. The meta-analysis concerned a total of 35 studies that had used control or comparison groups. There were a total of 72 results, 52 from before-during evaluations and 20 from before-after evaluations. The conclusions were as follows:

–   The overall effect of safety campaigns was estimated to reduce the number of accidents by 8.5% during the campaign period (31 studies and 52 results). For the period after the campaign, the overall effect nearly doubled: 14.8% (12 studies and 20 results). Both estimates were statistically significant. The effects were attributed to all components of the campaign (which included supportive activities like enforcement, rewards, legislation, educational programmes, etc.), in addition to the media campaign itself.

–   The effects were greater for campaigns carried out on a local or city scale. The analysis of campaign effects occurring during the campaign period showed that they were effective in reducing the number of accidents at all scales. City campaigns had larger effects than nationwide ones, with reductions of 15.8% and 10.7%, respectively, while local campaigns fell in between, with a drop of 13.5%. Provincial campaigns were only marginally effective, with a 4.9% decline in accidents. All accident reductions were statistically significant.

–   The effects were greater for campaigns combined with enforcement and legislation or rewards. Campaigns carried out alone did not seem to produce any significant reduction in the number of accidents during the campaign period or after the campaign. When combined with enforcement, campaigns had statistically signifi-

cant accident reductions during the campaign, lowering the number of accidents by 6.9%. This meta-analysis provided empirical evidence supporting the statement that road safety communication campaigns can significantly help to reduce the frequency of accidents, especially when they are combined with other actions (legislation, enforcement, education, reinforcement).

–   The effects were greater for campaigns that relied on an explicit theoretical framework. Concerning the results obtained from evaluations carried out during the campaign, campaigns based on a theory resulted in a significantly higher accident reduction (20.1%) than did ones without a theoretical base (3.5%).

The meta-analyses in the GADGET project represent the first attempt to apply the meta-analysis approach to assessing the effects of safety campaigns on accidents. With this in mind, the above results must be interpreted with considerable caution, since knowledge of the meta-analysis method at that time – 1999 – was rather limited and not very sophisticated. The analyses performed were only bivariate, i.e., estimating the effect of only one variable at a time without taking possible effects of other variables into account. Today meta-regression would be used to assess the partial effect of one variable while simultaneously controlling for the effects of other variables. The second major deficiency is the project's failure to test for a publication bias – i.e., the tendency to only publish evaluation studies with "successful" or "wanted" effects. This being said, the GADGET project nevertheless provided valuable experience and laid the foundation for bringing the meta-analysis method up to a more sophisticated level that could be applied in subsequent projects (INFOEFFEKT and CAST). Moreover, the main conclusion drawn in the GADGET project should not be ignored, i.e., some road safety campaigns do significantly reduce accidents. On the other hand, the GADGET project provided no insight into the mechanisms and variables that contribute to accident-reducing effects.

INFOEFFEKT project

Based on an INRETS study[132] that updated, reorganised, and reanalysed the GADGET database, the INFOEFFEKT project[152] was completed in 2004. Again, meta-analysis was applied in order to see if campaigns reduce traffic accidents, but this time the project included tests and corrections for publication bias, and also multivariate predictor models tested via meta-regression. There were 72 results from the campaign period and 14 results from the post-campaign period. The effects on accidents were -8.9% (95% confidence interval: 12.7, -4.6) and -14.8% (95% confidence interval: -23, -0.5), respectively. Both results are statistically significant.

Several bivariate analyses were carried out. The main findings were:

–   Campaigns against drinking and driving reduced accidents significantly by approximately 14%.

–   There was no significant effect of campaigns against speeding.

–   Single-theme campaigns significantly reduced the number of accidents by approximately 10%, while multi-theme campaigns did not. Mass-media campaigns alone (i.e., only TV, radio, and/or newspapers), without any accompanying measures, had no impact on accidents.

– Campaigns with police enforcement, and police enforcement plus education, reduced accidents by 13% to 14%, which is statistically significant. Local, personally-directed campaigns showed the largest effect of all campaign types, with an impact of nearly 40%. This aggregated result must be considered with caution, however, as it is based on only a small number of individual studies, and the confidence interval is also quite large.

Starting from these bivariate findings and adding more hypotheses about variables that might explain why some campaigns do in fact reduce the number of accidents, two multivariate predictor models were developed and tested via meta-regression. The main purpose of applying multivariate models is to find out whether the proposed variables exhibit partial effects while controlling for all other variables in the predictor model. This is the principal advantage of a multivariate analysis as compared to bivariate analysis. The main findings of the meta-regression were as follows:

■ Australian and Dutch campaigns both made statistically significant contributions to explaining the overall accident-reducing effect of campaigns as compared to campaigns in other countries. The Australian campaigns were mainly directed at drinking and driving and most of them utilized Random Breath Testing (RBT) as part of police enforcement. The Dutch campaigns were all directed at speeding, and speed-limit enforcement was an accompanying measure in all cases. Thus, both the Australian and Dutch campaigns relied heavily on police enforcement.

■ *Personal influence* was the only kind of communication that significantly contributed to explaining why the campaigns reduced the number of accidents (p = 0.0032). Personal influence is partly defined as two-way, face-to-face communication, but two-way communication is not a precondition for personal influence to occur. If, for example, letters are addressed personally to members of a given target group, this can be classified as a source of personal influence. Communications were categorized as being of the personal-influence type based on an assumption taken from Petty and Cacioppo's Elaboration-Likelihood Model[118], namely that personal influence happens when information is processed by the central route (for a more detailed discussion, see *Behavioural change theories*, pp. 59-77). In simpler terms, the processing of campaign information was probably (highly) conscious; people might have done a substantial amount of reasoning about the information provided to them by the campaign.

■ A duration of less than 200 days was significantly more effective (p = 0.0002) than a duration of more than 200 days. It seems reasonable that there might be an optimum campaign length, and further, that the reason behind this optimal length might have something to do with how long it is possible or wise to focus on a single theme. The optimum length can be used as a rough guide when planning a road safety campaign. It has been found that campaigns lasting more than one year were less effective than those of shorter duration[152]. According to this result, a possible "saturation effect" should be taken into account when planning a campaign.

For the rest of the predictors, which included theme, year and type of campaign, size of target group, and communication channels and strategies used (TV, radio, newspapers, leaflets/brochures, two-step/multi-step strategy, roadside feedback of

information, etc.), there were no statistically significant effects. Considering all communication channels, none seemed to have a special advantage in explaining the accident-reducing effects of campaigns except personal communication. In particular, large, nationwide, mass-media campaigns without accompanying measures seemed ineffective. Also, smaller-scale (more localized) campaigns directed towards a specific target audience seemed to be more effective than those targeting the whole population.

CAST project

The CAST project[4] employed the advanced meta-analysis method used in INFOEFFEKT (i.e., tests and correction for publication bias), and at the same time revised and expanded the database on which the INFOEFFEKT and GADGET projects were based. Additional campaign evaluations were found using search criteria for locating road safety campaigns that had measured accidents, behaviours, or beliefs before-and-after or before-and-during the campaign. Evaluations of campaigns lacking a control group were included in CAST but statistical checking was done to ensure that non-controlled effects did not differ significantly from controlled effects. Using this search method, a total of 433 campaign effects were isolated from 221 campaign-evaluation studies[1] retrieved at the pre-review stage.

The results given here represent the state of the CAST findings at the pre-review stage.

The effects were classified according to one of the nine different outcome measures on which they were based, and the overall effects were then calculated for each class. A significant overall reduction of 6% (between -10% and -1% at the 95% confidence interval) in the accident count was found in connection with these campaigns, consolidating the results from previous meta-analyses. Seatbelt wearing was found to increase by a significant 25% (+18, +31), and the combined campaigns also exhibited a significant 16% (-25, -6) reduction in speeding-related events. Safety campaigns also showed significant increases in yielding behaviours (37%), understanding of risks (16%), and campaign recall (120%). However, there were non-significant effects of the campaigns on the outcome measures of behaviours, attitudes, and knowledge related to drinking and driving.

Subgroup (bivariate) analyses of the accident-count effects showed that drinking-and-driving campaigns were accompanied by a significant 20% (-26, -14) drop in the accident count, while seatbelt campaigns led to a significant 8% (-12, -4) decline in accidents. Speeding campaigns were accompanied by non-significant changes in accident levels, reiterating findings from INFOEFFEKT.

Further subgroup analyses were carried out in CAST for the group of accident-count effects and the group of seatbelt-use effects. In each case, the effects were grouped one variable at a time for variables related to campaign evaluation, campaign-message delivery, and campaign content. As in INFOEFFEKT, the primary reason for conducting subgroup analyses was to generate models of the variables. This was done using meta-regression, which is superior to bivariate analysis for identifying factors influencing campaign effects.

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1   Some campaign evaluation studies involving a control group and some not.

Initial meta-regression models were developed on the basis of the subgroup analyses, past findings, and theoretical knowledge. These models were then refined using statistical and theoretical reasoning to produce final models describing the factors likely to make unique, significant contributions to the impact of a campaign. The results are presented below.

Accidents

At the pre-review stage, the CAST model contained a set of seven factors that together accounted for 30% of the variance in accident-level changes accompanying campaigns (F = 6.31, p < 0.001). Of these factors, *on-road delivery* of the campaign message made a significantly positive contribution to accident reduction (p < 0.01). In contrast, *combined mass-media delivery* (use of at least TV, radio, and newspaper together) was found to be detrimental to changes in accident levels relative to the other factors in the model (p < 0.01). The use of *personal influence* to deliver the message was beneficial, although the result was not significant in the final model (p = 0.12). A *drinking-and-driving theme* was positive in terms of accident reduction (p < 0.01), and the beneficial effect of *enforcement* on accidents nearly reached significance in the model (p = 0.06). Finally, a *short campaign duration* was beneficial and the existence of recent campaigns (carried out after 2000) was detrimental. This gave the following final model:

Model of relative influence of campaign factors on reducing accident counts
> *Positive*
>> Drinking-and-driving theme
>> Short campaign duration
>> On-road delivery
>> (Personal influence)
>> (Enforcement)
> *Negative*
>> After 2000
>> Combined mass media

Seatbelts

Ten factors were identified that together accounted for 60% of the variance in seatbelt-wearing changes in connection with a campaign (F = 16.8, p < 0.001). During the development of the CAST seatbelt model, several attempts were made to improve its statistical properties (identify outliers, improve distribution pattern, and so on). While reservations remained about the properties of the model in its pre-review stage, it was considered a fair representation of the data.

Of the ten factors isolated, by far the strongest contribution was from *initial seatbelt wearing,* i.e., usage rate before the campaign (p < 0.001). The lower the initial usage rate, the higher the effect of the campaign tended to be. This result was very robust and consolidated Elliott's earlier findings[2].

As with accidents, *on-road delivery* was beneficial in attempts to increase seatbelt wearing (p < 0.05). Carrying out campaigns within a *limited area*, such as within an organisation or car park, was also beneficial (p < 0.001). Other significant contribu-

tions were made by addressing the *risk of harm* to oneself or others (p < 0.05) and using *humour* (p < 0.01). These last two factors were beneficial and detrimental, respectively, to seatbelt wearing. Of the other factors in the model, *personal influence* during delivery was again beneficial but not significant. *Enforcement* was not a significant factor either, possibly due to the presence in the database of many seatbelt studies with low usage rates carried out in a limited area, which may well have been effective without enforcement.

The model at the pre-review stage was then summarised as follows:

Model of relative influence of campaign factors on increasing seatbelt-usage rates
>   *Positive*
>   Initial seatbelt-usage rate
>   On-road delivery
>   Limited area
>   Addressing risk of harm
>   (Personal influence)
>   *Negative*
>   Using humour
>   (Showing non-shocking consequences)
>   *Neutral*
>   Enforcement
>   Short duration
>   Combined mass media

The studies in the CAST database thus provide evidence that on-road delivery is beneficial, both for reducing accidents and increasing seatbelt use, and that personal influence might also be profitable. The benefits of using enforcement seen in earlier projects were evident here in the case of accident reduction, but not for seatbelt wearing. Across these first two types of campaigns, then, there are indications that campaign effects get smaller as time goes by.

One could have predicted that meta-regression would identify a single set of campaign factors responsible for successful changes both in road-user behaviour (e.g., seatbelt use) and ultimately in the number of accidents. One could go further and predict that that same set of factors would be more strongly related to behavioural outcomes, which may be influenced more directly by campaigns than accident levels are. The two models presented in CAST should not be considered in this way, for several reasons. Firstly, the accident effects used to generate the accident model are from campaigns whose themes were not only seatbelt wearing but drunk driving, speeding, general road-safety behaviours, and so on. Changes in each of these behaviours can be influenced by different campaign factors and may not necessarily have the same effects on accident counts. Secondly, the models were generated from groups of studies that exhibited systematic differences. For example, studies using seatbelt effects, more than studies using accident counts, tended to evaluate campaigns that had been carried out on restricted populations. Small populations are amenable to different measures, and might be influenced in different ways.

Therefore, CAST strongly recommends that the results of these models not be used without careful consideration of how they were generate.

Synthesis

Main recommendations

Trying to identify the key elements that contribute to the success of a road safety communication campaign is essential for learning from the past and for improving future campaigns. However, this task can prove difficult, and finding the right combination of elements even more so.

The results from both descriptive studies and meta-analyses show that campaigns are more successful when combined with other actions (enforcement, legislation, rewards, and/or education), when they make use of a theoretical model, when they address a specific target audience, and when that target audience is segmented.

Descriptive studies provide useful, qualitative information that helps to interpret quantitative results. According to descriptive studies, the effectiveness of a road safety communication campaign is enhanced by the following key elements:
– Relying on social marketing (marketing principles, marketing strategy).
– Defining clear and realistic objectives regarding progress of work and evaluation of the results.
– Defining the problem.
– Taking into account the political, cultural, and economic context.
– Analysing the situation based on research (accident statistics, observations, studies, etc.).
– Involving stakeholders, including the police.
– Using planned programmes.
– Considering the elaboration of the message with great care, especially when resorting to fear appeals in order to avoid inhibitory fear (see *The message,* pp. 123-136).

According to such studies, the effectiveness of a road safety communication campaign is enhanced by the following key elements:
– Combining communication with enforcement, education, and/or legislation.
– The use of a theoretical model.
– Basing campaigns on prior research (qualitative and/or quantitative).
– Choosing a single theme rather than multiple themes.
– Defining a specific target group rather than addressing the whole population.

Limitations of descriptive studies and meta-analyses

Although both descriptive studies and meta-analyses have their strengths, they also have limitations that need to be carefully considered before their results can be used.

Limitations of descriptive studies

One main criticism regarding descriptive studies is that the method used to extract information is very informal and that there is a lack of explicit techniques for selecting and evaluating the material. As a consequence, it is very difficult to assess biases and compare results across studies.

Another problem is that descriptive studies are unavoidably subjective – and this subjective perspective can be difficult or impossible to overcome. Hence, the results of descriptive studies can potentially reflect the researcher's opinion rather than objective facts. This bias can be only partially compensated for by the expertise of the researcher involved. However, even descriptive studies carried out by an expert are not a guarantee of objectivity, since even in this case, the researcher could be motivated by personal interest and therefore only present research findings that confirm and reinforce his/her own theories.

Moreover, the information provided in descriptive studies is verbal rather than quantitative, making the material very extensive. In order to overcome the problem of having too few cases, or of trying to analyse a greater number of studies, descriptive studies are often based on conclusions of previous reviews. The problem with this approach is that earlier shortcomings will be replicated and may be more difficult to detect.

Finally, descriptive studies sometimes include a wide variety of factors without being able to discriminate between the factors contributing to the success or failure of the campaign. Hence, the transferability of results from one review to another can be very problematic.

To overcome these limitations, descriptive studies should be supplemented by meta-analyses. However, these too have their limitations. While the use of meta-analysis has many supporters in various fields of research, there are other researchers who have questioned the method.

Limitations of meta-analyses

One criticism of meta-analyses is related to the different cases of the results presented in the analysis outcome. Being a summary of many studies, it is often difficult for a meta-analysis to identify the causes of discrepancies in the findings (are they due to methodological issues, systematic errors, etc.?). However, even when there are relatively few studies on a given topic, it is difficult to determine if outcome differences are attributable to chance, methodological inadequacies, or systematic differences in the characteristics of the studies examined.

Another limitation of meta-analyses is that sources of bias are not controlled by the method. A meta-analysis of road safety communication campaigns will provide unreliable results if the evaluations used are not designed to draw clear conclusions, including, for example, campaign evaluations testing the effect of campaigns with a single measure. This results in oversimplification of the campaign's outcome. To overcome this problem, some meta-analyses include less robust studies whose weak points are corrected by inserting a variable that examines the effects of the research quality on the effect size. Another problem with meta-analyses is related to their use of published results. The fact is that published studies are more likely to show that a campaign has been successful (the so-called publication bias).

Finally, a meta-analysis does not always distinguish between low- and high-quality studies. Should that be the case, interpretation of the results becomes problematic.

If the effect size and the results of associated measures are taken literally, then the risk is rejection of attempts that have failed because of inadequate preparation or implementation.

We can therefore conclude that meta-analyses give important information about what works well, and what does not work so well. However, they leave out some crucial details about the campaigns. As a supplement, a more qualitative approach can be used.

Conclusion

Both descriptive studies and meta-analyses have their strengths and weaknesses, but they complement each other. While a weakness of the former is that they provide us with too little information, a weakness of the latter is that they are too numerous. Moreover, the descriptive approach focuses more on the process, whereas meta-analysis focuses on outcomes. The former offers a more sophisticated understanding of how campaigns work; the latter facilitates in-depth quantitative analysis of the outcomes. The joint use of the two methods can provide valuable information that helps us learn from past experiences. Thus, both methods should be used.

Descriptive studies and meta-analyses provide key information from past campaigns to aid in designing, implementing, and evaluating a new campaign. The new campaign can be adapted from one context to another, one country or city to another, one specific target audience to another, etc.

How to adapt a campaign: planned programmes

There is sometimes a temptation to take a road safety communication campaign (or key elements of it) that has been successful in one country and reproduce it "as is" in another. Even if one takes into account important components that have an impact on the results, such as cultural differences, legal restrictions, baseline behaviour, specific local laws, driver's licence procedures, etc., one can still be tempted to merely reproduce a previous campaign. However, a communication campaign is always a unique process. So, even when it is possible to use key elements from past campaigns as a starting point, it will always be necessary to analyse and rethink the original campaign and adapt it to the new situation.

After presenting the SUPREME project[153], which studied best practices in road safety, we will analyse the procedures and shared knowledge that have been put to use in planned programmes carried out over the years, from the local up to the European level.

Planned programmes in road safety: the SUPREME project

The SUPREME project[1] is an international programme on road safety whose main goal was "*to collect, analyse, summarise and publish best practices in road safety in the Member States of the European Union, as well as in Switzerland and Norway*". The SUPREME project provides a useful collection of best practices at national and regional levels. Its explicit goal is to encourage the adoption of successful road-

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1   SUmmary and publication of best Practices in Road safety in the Eu MEmber States, plus Switzerland and Norway.

safety strategies and measures in European countries. The target audience of the project includes policy- and decision-makers, as well as practitioners who, through the efforts of this project, have at their disposal a selection of *evaluated* road-safety interventions and an overview of the positive and negative aspects of each kind of intervention.

The SUPREME project describes practices in the following nine areas: institutional organisation of road safety, road infrastructure, vehicles and safety devices, road-safety education and campaigns, driver's training, traffic-law enforcement, rehabilitation and diagnostics, post-accident care, and road-safety data collection.

Interventions were selected on the basis of information provided by partners who filled out a very extensive questionnaire. After that, a number of measures were chosen and graded on a scale from *best*, to *good,* to *promising* practices. The assignment of a grade was based on several criteria, including *"scientifically proven effects on road safety, a positive cost benefit ratio, expected sustainability of effects, public acceptance for measures and good transferability to other countries"*. The selected practices were classified as follows:

–   Best practice: measures that comply with most of SUPREME's internal selection criteria; in particular, effectiveness (in terms of expected road-crash reduction in fatalities and serious injuries) should have been demonstrated in previous scientific evaluations.

–   Good practice: the measures adhere to most criteria, but suffer from a lack of data in criteria related to "scientific evaluation of the effect" and/or "cost-benefit ratio".

–   Promising practice: mainly "new" measures that have not yet been subjected to a thorough evaluation procedure, but according to expert opinion, have a high potential for improving road safety.

Following this procedure, the SUPREME team selected four campaigns as examples of best practices (see Table 5).

Table 5 ■ *Campaigns selected by the SUPREME project as examples of best practices*

Sub-theme	Best practice measure(s)	Country
Driving under the influence	Bob	Belgium
Seatbelts	Goochem, the armadillo	The Netherlands
Lighting and visibility	The sign of light	Luxemburg
Other	"Speak Out!"	Norway

The SUPREME project provides a good base, especially for planned international programmes. However, presenting a list of campaigns might prompt people to simply

pick one out, without determining whether it is suitable for their own use. This is something that should be avoided. Again, every campaign is a unique process and it is essential to analyse and rethink the original campaign and adapt it to the new situation and context.

In the same way that the SUPREME project studied best practices in road safety, several other European projects have been conducted to share knowledge and know-how.

Planned road-safety programmes: potential for European collaboration

Several European-level organisations have made it a practice to exercise due caution when it comes to reliance on road safety communication campaigns as the main intervention in combating a road-safety problem. There is an awareness of the limitations and difficulties involved in promoting or advertising national safety campaigns for use on a European scale.

Despite the general caution about the pitfalls inherent in international exchanges regarding communication campaigns, many national authorities and leading road-safety institutes across Europe believe that the misleading "import/export" point of view can be overcome and that planned international programmes for road safety communication campaigns can lead to mutual benefits (see Box 6).

Box 6 ■ Projects conducted in several European countries and co-financed by the European Commission (DG TREN)

> –   *EuroBOB* ("designated driver"). Initiated by IBSR (Belgium), 15 European member states are involved: Austria, Belgium, the Czech Republic, Denmark, France, Greece, Hungary, Ireland, Italy, The Netherlands, Poland, Portugal, Spain, Sweden, and the United Kingdom. In 2007, it was joined by several regions of Germany.
> –   *NESA* ("*Nuit Européenne Sans Accident*"). A programme to make young drivers aware of the influence of alcohol and drugs on driving, and to help them become responsible drivers. Initiated by RYD (Belgium), 16 member states were involved in 2007 (Belgium, The Netherlands, Luxemburg, France, Germany, Poland, Estonia, Latvia, Lithuania, Sweden, Slovakia, Portugal, Denmark, Greece, the United Kingdom, and Ireland).
> –   *1-life.* Initiated by the European Red Cross Organisation: targets children and teenagers.
> –   *EUCHIRES* (seatbelts & child-restraint systems): initiated by IBSR (Belgium) and the Ministry of Public Works (The Netherlands). In 2005, 10 member states were involved: The Netherlands, Portugal, Spain, Finland, Sweden, Germany, Belgium, Latvia, the Czech Republic, and Poland.

Ideally, a programme to enhance the integration of national interventions should take the following steps:

1   Identify a campaign that has proven to be effective (if possible one that has been evaluated over a several-year period rather than just one year), in a given country, on a given topic.

2 Propose the successful campaign to a consortium of countries, providing:
    a Economic support (co-financing).
    b Shared knowledge: well-known, detailed methods, procedures, and feedback on weaknesses and strengths of the campaign (probably as important or more important than economic support).
    c Minimum evaluation requirements (e.g., before/after evaluation with control or comparison groups).
3 Analyse cultural differences, legal restrictions, baseline behaviour, existing traffic laws, driver's licence procedures, etc. in order to make sure that the safe behaviour promoted by the communication campaign can be carried out in the participating countries.
4 Follow up on campaign implementation, adhering to common, minimum-evaluation standards.

The fundamental criterion stressed by several European-level organisations is the importance of *evaluating* effects of communication campaigns: this is considered the only way to implement an effective intervention on such a large scale. Besides determining whether the campaign was a success or failure, a complete evaluation report on past campaigns will pave the way for other countries planning similar interventions, so that potential pitfalls can be anticipated and avoided. Long-term, multinational planned programmes should not be implemented without an evaluation system that provides continuous feedback on the effects of the intervention.

Conclusion

Key elements of road safety communication campaigns can be extrapolated from past experiences, through qualitative and quantitative methods such as descriptive studies and meta-analyses. These methods can complement each other and can be very helpful in implementing a road safety communication campaign (planned programmes) or in adapting a campaign from one situation to another. However, a proven success somewhere else can actually turn into a total failure if "imported" without paying attention to local differences and specifically analysing all variables involved in a road-safety issue. Practices that have been evaluated as effective in previous high-quality projects can provide useful input for planning new programmes.

2.3 Target audience

Sometimes the targeted group for a campaign can be the whole population, but more typically it is a specific audience that must be defined. In the latter case, it is necessary to divide up the general population into segments. Identifying the target audience is a key success factor for road safety communication campaigns, since it allows planners to take into account road users' level of knowledge, beliefs, and/or behaviour, and the best way of reaching them. The choice of whether to target the whole population or a specific audience depends upon the campaign objectives. For instance, a road safety communication campaign aimed at informing drivers about a new law might address the whole population, whereas if the aim is to encourage young male drivers to reduce their speed, then the target audience will obviously be more specific.

In this section, we will discuss the reasons for segmenting the target audience, and how to go about defining it. This will be followed by a discussion of various techniques that can be used for segmentation. Finally, the importance of gathering information about the target audience and of choosing the right media to reach it will be stressed.

Why segment the target audience?

The target audience should be defined according to the problem behaviour. This definition can be based on databases, statistics, observations, and surveys. However, defining the target audience is not enough; the communication must be optimised in order to reach the whole target group and to address members of the audience as effectively as possible. To this end, the segmentation process is a good strategy for developing effective messages and choosing the most appropriate communication channels for each subgroup of the target. There are many situations in which it might be useful to segment a target audience, for example, if one segment needs more behavioural intervention than another, if some segments are more ready to respond to the intervention or respond differently to different strategies, etc.

Segmenting consists of separating the audience into distinct, relatively homogeneous subgroups called segments. A segment is a subset of the larger population that shares key characteristics, making it more likely that individuals in a given segment will respond to the same stimuli in a similar way.

The basic principles of segmentation are that each segment is homogeneous, there is heterogeneity between segments, and the segments are measurable, identifiable, accessible, actionable, and large enough to be cost-effective. Indeed, each individual segment corresponds to a different type of person, and each type of person responds in a unique way to marketing strategies.

Some barriers to segmentation were pointed out by Andreasen (1995)[154] (see Box 7).

Box 7 ■ *Barriers to segmentation*

> – A belief that funding agencies or the government will discourage segmentation of target audiences to avoid any signs of partiality (unless the targeted group is the most needy one).
>
> – A lack of appreciation of segmentation's potential to significantly increase the behavioural impact of the campaign while reducing its costs.
>
> – A mistaken devotion to campaign uniformity, based on the (programme-centred) belief that it is essential for keeping costs down through economies of scale and for assuring that interventions (communication messages and control measures) are always consistent.
>
> – A lack of understanding of just how to go about detailed segmentation and when to do so (if segmentation is not carried out by an advertising agency).
>
> – A lack of available data upon which to base a sound segmentation strategy (to overcome this, it is necessary to collect more segmentation data).
>
> – An unwillingness to collect new segmentation data — either because managers do not know what data to collect and how to collect them, or because they believe that such research efforts will not be cost-effective.

All of these barriers should be tackled when encountered, in order to ensure a successful segmentation process.

How to define the target audience

Identifying the target audience requires a strong methodology and should be data-driven. It is also essential to follow a systematic and rational process in order to identify and characterize the target audience.

Basic elements

A situation analysis will provide a broad picture of the road-safety environment. It will identify the major problems and give you a preliminary idea of what has to be done and where it should be done. To begin with, you should define the problem that needs to be tackled. Accident statistics, behavioural observations, and data on past sanctions can be useful in gathering all the information needed for problem definition. In cases where available information is insufficient, studies can also be carried out to gather more data (for more details, see *Thoroughly analysing the problem and possible solutions,* pp. 202-206).

This type of data will allow planners to identify the behaviour(s) that must be targeted, as well as which target group most often displays the unsafe behaviour. This can be the whole population or it may be limited to one or more specific target audiences. In other words, the general road-user population should be subdivided in relation to the problem. Information about the population will provide some ideas about the primary target audience, but the use of segmentation is recommended in order to avoid addressing everyone in the same fashion. Narrowing down the target audience(s) will help in elaborating a more effective message strategy as well as in formulating the message and choosing the best communication channels for reaching that audience.

The next step, then, is to subdivide the audience in relation to the solution for the problem behaviour, in order to decide which particular set of road users should be given priority.

Segmentation process

Segmentation is a creative technique[155] that can be performed in different ways, using several variables and different methodologies. There is no absolute, best way of segmenting, but there are several suitable ways that depend on the objective and the amount of available information about the target audience. In practice, a combination of variables will be used to segment the audience and to define each segment's profile. To identify a target audience, it is possible to use several variables, but the principle of within-segment homogeneity should be obeyed. The segmentation process consists of the *three steps presented below*.

1   Segmenting the audience

The most frequently used segmentation technique, which is based on the top-down approach[156], starts with the overall population and breaks it down into segments. The type of information available will determine which variables are used for segmentation.

There are four ways to segment, depending on the type of data available in the literature for the factors that predict the problem behaviour:
– Using variables such as demographic, geographic, psychographic, and behavioural characteristics.
– According to the primary and secondary audiences.
– Based on one or more theoretical models.
– Combining different types of segmentation.

Using segmentation variables

The first and most commonly used possibility is to segment on the basis of demographic, geographic, psychographic, and/or behavioural variables.
■ *Demographic* segmentation divides the population into subgroups using variables such as age, gender, size of family and birth order, education, income, occupation, socio-economic status or social class, etc.
■ *Geographic* segmentation divides the population into geographical areas using variables such as area of the world or country, country size, province, town, population density, rural or urban setting, etc.
■ *Psychographic* segmentation divides the population according to variables such as personality, beliefs, values, interests, lifestyles, etc.
■ *Behavioural* segmentation divides the population according to their behaviours and also to the perceived benefits, type of usage, and usage rate of the target behaviour in that segment.

According to the primary and secondary audiences

If there is enough information available from a theoretical model and/or elements of such a model influencing behaviour, it is possible to segment the audience into primary and secondary audiences (see Box 8).
■ Primary audiences are groups that the campaign is trying to get to perform a particular target behaviour.

■ Secondary audiences are groups likely to influence primary audiences by providing support for the campaign communication and reinforcing the targeted behaviours.

Box 8 ■ *Example of a campaign with primary and secondary audiences*

In 2002, a drinking-and-driving campaign was conducted in the UK to convince young male drivers not to drive after having drunk alcohol (primary audience). The choice was made to target their girlfriends (secondary audience) in order to convince the young males not to drive under the influence[157].

A two-step flow procedure can be used for segmentation. This method addresses the campaign to opinion leaders in order to reach the rest of the group. Indeed, a two-step flow of communication is based on the belief that the communication material is not transmitted directly from the communicator to the audience, but the influence occurs through a two-step process that begins with mass communication such as advertising, then goes to the opinion leader of the group, and finally from the opinion leader to other individuals.

The concept of primary and secondary audience can also have another meaning, namely that the primary audience is the main audience addressed by the campaign, whereas the secondary audience is a population that is concerned by the problem but is not a priority for targeting. For example, a Belgian courteousness campaign carried out in 2007 focused on truck drivers as the primary target, but also urged car drivers to have more understanding and respect for truck drivers.

Segmentation based on a theoretical model

If more information on the variables (or factors) used is available in research based on theoretical models, it is possible to segment the audience according to such variables in order to improve a campaign's chances of success.

For instance, it might be possible to segment the audience based on the *Transtheoretical Model of Change*[124,158] (see pp. 74-75). The model describes six stages that people go through when changing their behaviour and depending on the type of targeted behaviour and the targeted audience, it is possible to use the model together with other identified variables (see Table 6).

In terms of segmentation, the goal of a campaign might be to move segments from one stage of change to the next (see Box 9).

Knowing the behavioural stage of the target audience (i.e., knowing more about the needs, perceptions, attitudes, beliefs, knowledge, and environment influencing the target audience at a given time) helps to develop an appropriate strategy for moving the target to the desired stage. This approach can aid the practitioner in defining what to do, what message to elaborate, and what media channels to use. Indeed, every segment with its different needs, beliefs, and expectations requires a unique approach.

Box 9 ■ Illustration of segmentation based on the Transtheoretical Model

The New Zealand Land Transport Safety Authority (www.ltsa.govt.nz) bases its advertising on a model of behavioural change. On the subject of drinking and driving, a large proportion of the community has worked through the contemplation stage and reached the action stage. It is notable that when the level of promotion and enforcement is reduced, the crash rate tends to increase. Once a proportion of the population has moved into the action stage, gains in the form of a crash rate reduction should be achieved faster than in areas where most of the population is still at the contemplation stage. It is therefore very cost-effective to direct resources toward addressing these issues. Maintenance and reinforcement are necessary for those who have begun to change their behaviour.

Segmenting according to this model is just one possibility; it is also possible to use any relevant theoretical model that gives the main predictors of the problem behaviour or behavioural change.

Combining different segmentation criteria to increase accuracy

Depending on the type of targeted behaviour and the targeted audience, it is possible to cross different segmentation variables with the variables in a theoretical model *(*see Table 6).

Table 6 ■ Example of combining variables for a drinking and driving campaign: hypothetical segmentation combining geographic and demographic variables with the stages-of-change model (Adapted from Kotler, et al., 2002)[138]

	Stages of change			
	Pre-contemplation	**Contemplation**	**Preparation for or during action**	**Maintenance**
	Subjects think they are not concerned about drinking and driving	Subjects know they should not drink and drive, and they have been thinking about not doing it	Sometimes subjects drink and drive and sometimes they take a taxi or try to find someone who didn't drink	Subjects never drink and drive
Geographic Rural Suburban Urban				
Demographic 18-24 25-34 35-44				

After dividing the population into segments, the next step is to evaluate each segment in order to choose which segments to target.

2   Segment assessment

Andreasen (1995) suggested nine factors to consider in evaluating the audience segments, as well as ways of selecting and prioritising the factors. Each factor should be quantified and a degree of importance should be assigned to each one (see Box 10)[154]. Andreasen divided the nine factors into two groups: factors that affect allocation of resources, and factors that affect strategy. The first six factors are the easiest to use in evaluating segments; it is not at all sure that it is feasible to use the last three.

Box 10 ■ *Nine factors for evaluating segments*

> ### *Factors affecting allocation of resources:*
>
> **1**   Segment size: this indicates whether there are enough people in a potential grouping to comprise a useful market. How many people are in this segment? What percentage of the population do they represent?
> **2**   Problem incidence: this helps to determine whether a potential segment offers sufficient scope for the marketer's programme. How many people in this segment are either engaged in the "problem-related behaviour" or not engaged in the "target behaviour"?
> **3**   Problem severity: this contributes to the picture of a potential segment's need for the programme. What consequences does this segment experience as a result of the problem behaviour?
> **4**   Defencelessness: this is the relative inability to cope with the problem. It provides an important indicator that the marketing programme will be particularly useful to a potential segment. To what extent can this segment take care of itself versus needing help from others?
> **5**   Reachability (ease of access): this helps to assess the likelihood that a given resource will reach a potential segment. Can the audience be easily identified and reached?
> **6**   General responsiveness: this is the probable willingness to listen. It helps to assess the amount of change the available resources are likely to generate. How "ready, willing and able" to respond are those in this segment?
>
> ### *Factors affecting strategy:*
>
> **7**   Incremental costs: a segmentation expense measure, i.e., the additional costs required to address the group as a separate segment. How do estimated costs of reaching and influencing this segment compare with those for other segments?
> **8**   Responsiveness to marketing mix: sensitivity to various tactics suggests the kind of strategy that may be effective with a potential segment. How responsive is the market likely to be to social-marketing strategies (product, price, placement, promotion, and possible supportive activities)? It involves profiling the segment on the characteristics of perceptions of benefits, costs, social pressure, behaviour control, risk, competition, etc.

9   Organisational capability: marketing organisation scope provides a reality check for the marketer's ability to design and implement a strategy aimed at a particular potential segment. How extensive is the staff expertise or availability of outside resources to assist in the development and implementation of activities for this market?

The variables mentioned by Andreasen can be used to assess the segments by first calculating a potential effectiveness score, and then a potential efficiency score:

–   Effectiveness scores are determined from statistics and incidence data on four of the factors: segment size, problem incidence, problem severity, and defence-lessness. The segment's population size is multiplied by percentages of incidence, severity, and defencelessness. The resulting number becomes the segment's "true" market size relative to potential effectiveness.

–   Efficiency scores are determined from assessments of segments on the next five factors: reachability, responsiveness, incremental costs, responsiveness to marketing-mix elements, and organisational capabilities. This process requires assigning some quantitative value or score to each factor for each segment.

As mentioned above, in the context of road safety, factors that affect strategy are difficult to evaluate. Insofar as those factors are essential for calculating efficiency scores, it follows that determining these scores will be difficult as well.

3   Choice of one or more segments for targeting

The decision about which and how many segments to target always depends upon what is feasible and on considerations resulting from the evaluation made in the previous step. The above-mentioned groups of factors, allocation of resources and strategy must be considered when choosing segments for targeting. The higher the effectiveness scores, the wiser it is to choose these segments[138].

Segments to be addressed should be (i) those with the greatest needs, (ii) those most ready for action, (iii) the easiest to reach, and (iv) the best match for the campaign initiator. Measures used to assess each of these are as follows:

–   Segments with the greatest need are assessed according to analysis of crash data: size, incidence, severity, and defencelessness. This means that the segment with the greatest risk should be addressed first. More specifically, this corresponds to people who sometimes or often adopt the targeted risk behaviour.

–   Segments most ready for action: ready, willing, and able to respond.

–   Segments easiest to reach: identifiable venues for distribution channels and communication. In practice, campaign makers choose the easiest segment to reach for budgetary reasons. However, the intervention should primarily reach people who cause the most harm to others or people that are most at risk, groups that might not be so easy to reach. This could be solved, for example, by resorting to non-media solutions to reach a specific segment of the target audience, as a complement to a media campaign that targets a larger, easier-to-reach population.

–   Segments that are the best match for the organisation: organisational mission, expertise and resources, cost-effectiveness.

Some segments can be ignored as a result of the evaluation done at an earlier stage. There are several valid reasons for ignoring a segment: it may be too small, have a low problem incidence, low severity, high capacity to defend itself, or other reasons; for example, a given segment may have already been addressed in other campaigns. This is a decision that the practitioner must make based on an evaluation of the segment.

Gathering more information about the target audience

Once the target audience is defined, it is very important to know as much as possible about its segments because this helps in developing the best strategies to reach them (e.g., choice of message content and style, choice of media according to the degree of familiarity for the target and its preferences[159]).

Below are several kinds of questions that can be asked to find out more about a target audience. These should be customized for each campaign in order to obtain the most relevant information about the segment or target audience, and to be able to categorize the market segments (see Box 11).

It is also instructive to learn about characteristics that can have an influence on the target audience's message perception, such as comparative optimism for example. Comparative optimism means that individuals consider themselves more skilled at driving, less accident prone, and/or less likely to be sanctioned for violations than other drivers. Comparative optimism is predominant in Western countries insofar as more than half of the people display this trait. It would be relevant to know if the target audience expresses comparative optimism in connection with the problem behaviour. Comparative optimism, like other traits, can potentially lead people to ignore the message[160].

An experiment conducted in New Zealand found evidence to support *"the hypothesis that drivers who have a biased perception of their own speed relative to others are more likely to ignore advertising campaigns encouraging people not to speed"* (Walton & McKeown, 2001, p. 629)[161].

Box 11 ■ Some examples of questions (adapted from Weinreich, 1999[159])

Knowledge

– Are the target audience members aware of the problem?
– Do they know the key facts about the problem?
– Do they have any misconceptions about the problem?
– Do they know how to prevent or control the problem?
– Where do they get their information about the problem?

Beliefs

– Do target audience members believe they are at risk?
– How important do they feel the problem is, compared to other issues they face in their lives?
– Which other issues are associated with the problem in their minds?

–   How do they feel about the behaviour you will ask them to perform?
–   What are the benefits and barriers they see to performing the behaviour?
–   Do they think that they can perform the new behaviour?
–   Do they think that people in their social network will provide positive support for the behaviour? What are the perceived social norms relative to the behaviour?
–   Who or what has the most influence on the attitudes and beliefs of people in the target audience? Who do they look up to?

Behaviours

–   What are the target audience's current behaviours related to the problem? These answers tell us where they are in the stages-of-change model (Precontemplation, Contemplation, Preparation, Action, or Maintenance).
–   Have they tried the new behaviour? If so, why have they not adopted it?
–   In what circumstances do they perform the behaviour currently?
–   What would make it easier to perform the new behaviour?
–   Do they need new skills to help them perform the behaviour?
–   What behaviours compete with the proposed behaviour?

Communication channels

–   Which media channels does the target audience pay the most attention to (e.g., television, radio, newspaper)?
–   Which types of vehicles does the target audience prefer in each channel (e.g., which television shows, radio stations, newspaper sections)?
–   At what times and places does the target audience view or listen to these media?
–   What does the target audience do in its leisure time?
–   What organisations do the target audience members belong to?
–   What words do they use when talking about the problem?
–   Who do they see as a credible spokesperson concerning the problem?

Secondary target audience segments

–   What groups have the most influence over the behaviour of the primary audience?
–   How do they exert that influence?
–   What benefits would the secondary audience receive from serving as a programme intermediary?
–   What might be the barriers to involving them in the programme?
–   What are the secondary audience's own knowledge, attitudes, and behaviours related to the problem?

Additional information on the target audience's characteristics can be obtained from research and/or studies published in the literature (on this and other connected themes). Such studies can be qualitative (focus groups, interviews) or quantitative (for more details, see *Thoroughly analysing the problem and possible solutions*, pp. 202-206). In this case, preference should be given to studies that use the correspondence principle[162] whereby better predictions (and explanations) of a behaviour are obtained when beliefs and behaviours are measured on the same level of specificity, i.e., very specific or at a more general level.

Conclusion

The more that is known about the target audience – its characteristics, needs, wants, knowledge, beliefs, behaviours, perceived risks, social environment, and stage in the behaviour-change process – the greater the chances of developing a successful and cost-effective campaign. Audience segmentation ensures that the message and strategy for the intervention will have the greatest likelihood of reaching the target audience on more than just a superficial level.

2.4 The message

Over the years, communication experts have stressed that information presented to a target audience can play a fundamental role in changing people's knowledge, beliefs, or/and behaviours. This is not incorrect but at the same time it is important to remember that nowadays people are constantly bombarded with visual and oral stimuli and it would be impossible to pay attention to everything. Most of the messages presented are being ignored and others only looked at very briefly. It is very seldom that it makes the person to reflect and reinterpret well established ideas. The question to ask is what is needed for the campaign to break through this barrier, making people not only to see it but also process its information and if needed change their own behaviour. One important element to achieve this aim lies in the formulation and presentation of the message.

The aim of this section is to provide the reader with basic information for constructing a message that is likely to trigger behavioural change. It will focus on the message strategy (content strategy and execution strategy) and how this strategy can be implemented. This will be followed by a theoretical background on message pre-testing.

Message strategy

Having what is called a "message strategy" is essential for the success of any campaign. The main goal when planning the strategy is to be able to lead road users to adopt safe behaviour. This consists of trying to challenge pre-conceived ideas in order to weaken arguments that favour the problem behaviour. The message strategy is based on the campaign's communication objectives, which outline what one wants the target audience to do, know, or think as a result of the communication (see also : Rossiter & Percy, 1997)[163].

The message strategy can be subdivided into the *content* strategy (what will be said), and the *execution* strategy (how and by whom it will be said).

Message-content strategy: What will be said

Message content is directly related to the campaign's communication objectives, the target audience, the models that identify the main predictors of the problem behaviour (or behavioural change), and the benefits promised by the safe behaviour.

–   **Communication objectives**
The communication objectives refer to what one wants the target audience to know and believe, and how one wants them to behave. They are closely linked to the specific objectives of the campaign in terms of knowledge, beliefs, and behaviour.

– **Target audience and characteristics of the problem behaviour and/or safe behaviour**

It is important to understand what motivates the target audience to perform the unsafe behaviour and what would motivate them to perform the safe behaviour, in other words, to know the main predictors of both the unsafe and the safe behaviour.

– **Main predictors of the problem behaviour**

The message content must be linked to the main predictors of the unsafe problem behaviour. These should be based on a theoretical model such as the Theory of Planned Behaviour, the Theory of Interpersonal Behaviour, or the Health Belief Model.

– **Perceived benefits of adopting the safe behaviour**

According to the social-marketing framework, both the perceived benefits of adopting the safe behaviour and the perceived cost of adopting it are elements that can be used to define message content. Alternatively, the message can focus on the perceived benefits and costs of *not* adopting the safe behaviour. Whatever option is chosen, the message should concentrate on tipping the balance of perceived costs and benefits in favour of the safe behaviour, in line with social-marketing theory (see pp. 87-94) and social-cognitive models of health (see pp. 64-66). Of course, individual differences can influence the way information is processed (see *the Elaboration-Likelihood Model*, pp. 70-71). For example, persons with high involvement (i.e., highly concerned with the problem) will process information on costs and benefits thoroughly; these people may be persuaded by information alone. In contrast, people with low involvement (i.e., less concerned or not concerned with the problem) will not process information thoroughly. For these people, the information should centre on extra incentives for engaging in the desired behaviour.

Once the message-content strategy is defined, the next step consists of defining the strategy for executing the message.

Message-execution strategy: How and by whom it will be said

The goal in developing the message-execution strategy is to devise messages that will capture the attention of the target audience and lead them to adopt the safe behaviour. In order to achieve this goal, the message needs to be: believed by the audience (credible), possible to achieve and honest (trustworthy), used repeatedly (consistent), easy to understand (clear), able to generate change (persuasive), of relevance to the person (relevant), and appealing (attractive) (see Figure 26). DeBono and Harnish (1988)[164] maintained that to be successful, a communication needs to make people dissatisfied with their own views and convince them that their own attitude is redundant and that the one presented is better. For instance, if we want to increase traffic safety and compliance with traffic laws, then the message must be seen as positive and worthwhile. If more convincing, contradictory information is presented, then the initial message will quickly lose its impact and be regarded as untrustworthy. Furthermore, a message that is related to a person's perception of himself/herself will be seen as attractive if the new behaviour makes the person feel more highly valued by others[164,165].

Figure 26 ■ Seven characteristics of an effective message

Designing effective messages is a genuine art: "*The final message that a target audience member receives is a combination of the communication strategy, how the message is executed in the materials, and how it is processed by the receiver*" (Siegel & Doner, 1998, p. 375[166]). Message designers should "think of an ad not as what you put into it, but as what the consumer takes out of it", meaning how the person receiving the message will interpret it[167].

To improve our understanding of why a communication may or may not work, McGuire proposed a 12-step information-processing paradigm (*Information Processing Theory*[168]). This theory is very helpful here, and can be used in designing a message. It prompts campaign designers to think about how decisions regarding spokespersons, message strategies, communication channels, etc., can affect the 12 information-processing steps and thus the campaign's outcomes.

McGuire's 12 steps in the processing of persuasive communications are as follows: A person must (1) be exposed to a message, (2) pay attention to it, (3) take enough interest to process it further, (4) comprehend the message (learning what), (5) acquire taught skills (learning how), (6) yield to the message (attitude change), (7) store the message content, (8) retrieve that information at later times, (9) make decisions based on the retrieved information, (10) behave in accordance with those decisions, (11) receive positive reinforcement for that behaviour, and (12) make the new position a part of oneself by integrating it into one's cognitive structures and habit patterns.

Reaching any one of these steps is contingent upon success in all prior steps. The model suggests that a campaign will fail if it is unable to succeed with the audience at any one step: *"The failure of any of these information-processing steps to occur causes the sequence of processes to be broken, with the consequence that subsequent steps do not occur"* (Eagly & Chaiken, 1993, pp. 259-279)[169].

Hence, a message is more likely to have an effect if the person feels motivated to process it. This in turn increases the chances that the person will want to actively "elaborate" the message, i.e., actively think about the message or communication. However, motivation alone is not enough. McGuire pointed out that a message also needs to be understood. An individual needs to have the ability to cognitively process the message. This ability will increase if the message is comprehensible. In other words, cognitive capacity and motivation are key factors to consider when designing a campaign message. In this vein, both the *Elaboration-Likelihood Model* (ELM)[170] and the *Heuristic-Systematic Model* (HSM)[171] provide a deeper understanding of the processes involved. These models assert that information can be processed quickly and economically (peripheral route or heuristic processing), and/or deeply and in detail (central route or systematic processing) (see *Road safety and human behaviour*, pp. 29-80). Systematic or central-route processing occurs when people are motivated to process the core arguments of the message and are able to engage in such deep information processing. Conversely, heuristic or peripheral processing occurs when people are less motivated and not able to process the information deeply, or have developed a kind of automatic response to health messages in a given domain (here, road safety).

Structure of the message

When designing a campaign message, two different strategies can be adopted: a one-sided strategy or a two-sided strategy.
–   *One-sided messages* only present arguments in favour of the topic, knowledge, and/or behaviour they want to promote. For example: "Do not drive too fast because fast driving increases the risk of having an accident".
–   *Two-sided messages* present arguments both for and against the topic, and then give arguments to counter the opposing view. For example, "Do not drive too fast, because this increases the risk of having an accident. Maybe you think that fast driving allows you to save time. However, compared to what you can lose if you drive too fast – your own life or that of your passenger – do you really think that driving too fast is worth it?"

The choice of a strategy (one-sided or two-sided) will depend on several factors[172].

One sided messages are effective:
–   When the target audience is sympathetic to the message.
–   When the message is the only one they will receive on the topic.
–   When the objective is an immediate or short-term opinion change.
One-sided messages also allow you to increase the target audience's attention and interest in the topic. A recent meta-analysis[173] showed that one-sided messages increase attitude stability and therefore the link with the behaviour, and the likelihood of adopting the safe behaviour. However, this link depends on whether or not people have had direct experience with the problem behaviour.

Two-sided messages are effective:
–   When the target audience is unsympathetic to the message and initially disagrees with what the message is going to tell them.
–   When it is likely that the target audience will be exposed to contradictory messages.

Two-sided messages are usually very effective in changing the target audience's opinion when the negative aspects of the problem behaviour are known and can be convincingly argued against. Furthermore, if the audience is initially opposed to the view expressed by the message, then the communicator might start with an argument in favour of the opposing view, and then prove that that view has more pros than cons.

Another important debate regarding message structure is about "open" (implicit) or "closed" (explicit) messages. In the communication process, one can decide either to explicitly provide the conclusions of the message to the target audience (closed message) or to let the audience draw conclusions on their own (open message). However, if the message is open to several interpretations, there is always a risk that it will be misunderstood. Therefore it is generally better to provide a conclusion.

Emotional versus rational approach

The style of a message relates to the choice of using cognitive and rational information versus emotional and non-factual elements. Certainly there is no right or wrong answer to this question, since the choice of approach will depend on the objectives of the communication and on the target audience. However, the chosen approach should aim to increase the audience's willingness to process the information in the message.

Rational appeals emphasize objective information, deductive logic, and cognitive processing, i.e., they underscore the benefits to the road user of adopting the safe behaviour. Emotional appeals emphasize feelings and images; they "play" with emotions on the assumption that people generally decide how to act according to what they feel and then justify their decision rationally. In other words, both rational arguments and emotions motivate action. Many advertising professionals hold the view that advertisements should be either rational or emotional; others prefer that advertisements contain elements of both, while emphasising one or the other. When the target already has a strong intention to adopt the safe behaviour, using emotions can be an excellent option.

Emotion is used in advertising at one of the following levels[174].
–   Descriptive level: the viewer recognizes the emotions being expressed by actors in the advertisement but does not experience those emotions.
–   Empathic level: the viewer experiences the same feelings that the actors in the advertisement are supposed to feel.
–   Experiential level: the viewer experiences emotions related to real or imagined, past or anticipated events, that are stimulated by the content of the advertisement.

Emotions can be useful in modifying the target audience's beliefs. Research has shown that the effect is larger if an emotional message is used[2]. Emotional responses can be either positive (love, happiness, pleasure, etc.) or negative (fear, anger, sadness, etc.). Messages that create negative emotional responses are often based on fear appeals or negative framing (i.e., formulated in terms of losses, see *Framing*, pp. 130-131), especially in the field of road safety. On the other end of the spectrum, messages designed to create a positive emotional response often use humour

(or human affection) or positive framing (i.e., formulated in terms of benefits) as main ingredients.

Fear-appeal messages

Amongst the message strategies based on emotional appeals, particular attention has been paid to messages that explicitly aim to provoke fear, anxiety, or apprehension in the target audience. The fear-appeal technique consists of three steps: (1) attract and hold the target's attention, (2) give an effective recommendation (safe behaviour) to cope with this threat, and (3) increase the target's confidence in his/her abilities to successfully and easily perform the recommended behaviour. Unfortunately, campaign designers often forget Steps 2 and 3, so fear appeals fail or even lower the possibility of behavioural change[175]. That is why it is important to follow the three-step process strictly. Fear appeals have been widely used in the field of road safety.

Several models can help us understand the way fear appeals work.

The *Parallel Response Model*[176] distinguishes two reactions to fear appeals: a cognitive reaction – the danger control process – and an emotional reaction – the fear control process. The danger-control process consists of trying to find behaviours that will reduce the danger. In this case, the outcome of the fear appeal will be related to acceptance of the message's recommendations, that is to say, it will lead to attitudes, intentions, and behaviours that are in line with the recommendations. The fear-control process consists of finding responses that will reduce the emotional threats caused by the fear appeal. These responses can be either to avoid the message or to deny the threat. In other words, the fear-control process may lead to rejection of the message. If performing the preventive behaviour does not lead to a threat reduction, various mechanisms will be activated that protect the person from the threat (deny, defensive avoidance, or reactance)[177]. Simply stated, when exposed to a frightening message, people have the option to either control the danger that is communicated in the message or control the fear that is induced by the message.

The *Protection Motivation Theory* (PMT) (see pp. 66-68) can also help us understand the processes that take place when people are exposed to a shocking message. In this model, fear is regarded as an intervening variable, not as an absolute requirement for inducing change. Secondly, it stresses that a threat can be minimized through the use of adaptive responses if the person believes in his/her own ability to avoid the situation. Accordingly, a threat that an individual thinks is unavoidable could increase, rather than decrease, maladaptive responses.

PMT identifies perceived threat and perceived efficacy as essential variables of fear appeals[175]. Perceived threat is composed of two dimensions: perceived susceptibility to the threat (the degree to which one feels at risk of succumbing to the threat) and perceived severity of the threat (the amount of harm expected from the threat). Perceived efficacy also has two dimensions: perceived self-efficacy (one's beliefs about one's ability to perform the recommended response) and perceived response efficacy (one's beliefs about the efficacy of the recommended response itself).

Thus, the dimensions of threat[178,179] are severity and susceptibility; the dimensions of efficacy are self-efficacy and response efficacy. High levels on these dimensions have a proportional impact on beliefs, intention, and behaviour changes. The stronger the severity and susceptibility expressed in a message, the more the beliefs, intentions, and behaviours will change[175]; the stronger the response efficacy and self-efficacy expressed by the message, the more the beliefs, intentions, and behaviours will move toward the recommended response.

A more recent model, the *Extended Parallel Process Model* (EPPM)[180], combines the Protection Motivation Theory (PMT) and the Parallel Response Model (see Figure 27). The EPPM hypothesises that when both the perceived threat and efficacy are high, danger control processes are initiated, resulting in adaptive behaviour. Conversely, when the perceived threat is high, but perceived efficacy is low, fear control processes are initiated, resulting in maladaptive behaviour[180].

Figure 27 ■ Extended Parallel Process Model
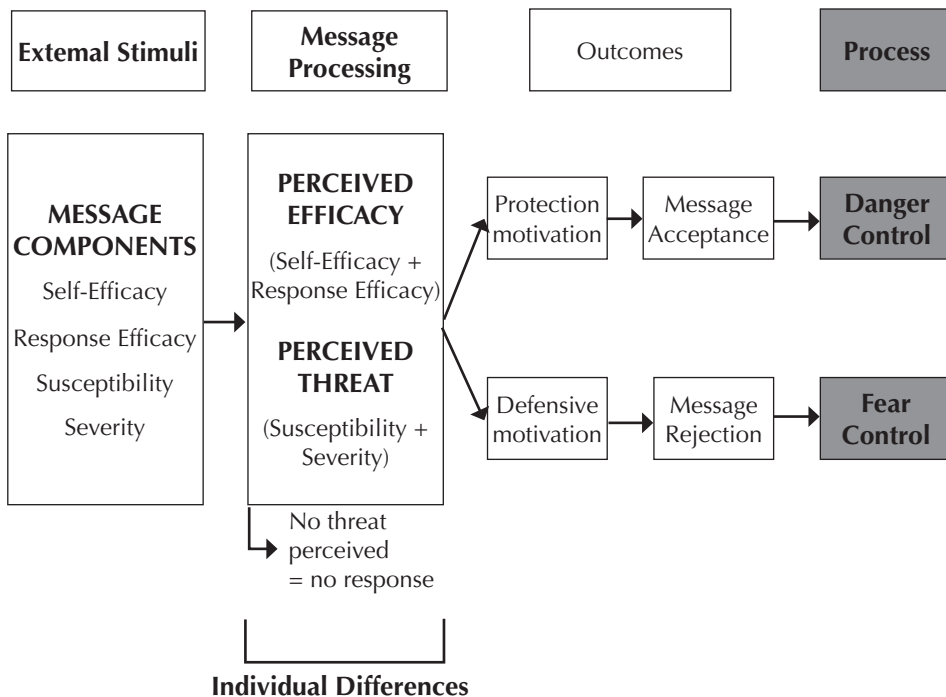
According to the model, some people are less receptive to fear appeals than others, for example low-anxiety personalities, people who perceive themselves as physically invulnerable, or those who find the strong appeal interesting but not particularly relevant to them[149]. Moreover, a relatively small amount of fear can motivate people who are highly involved in an issue, whereas a more intense level of fear is required to motivate uninvolved people[181]. This also illustrate the importance of understanding the target's characteristics (see *Target audience,* pp. 113-122), especially for designing the message.

In conclusion, fear appeals can be effective, but only in specific situations. When resorting to fear appeals, it is important to take many factors into account, more factors than for positive emotions.

Fear appeals can have a particularly strong impact when:
– They describe a threat (while emphasising the severity of the threat and the vulnerability of the audience). Vivid, concrete information (for example, images or photos) depicting more terrifying aspects increases the severity of the message.
– They mention recommendations for reducing or avoiding the threat. However:
■ The recommendations must be realistic and credible in the sense of being possible to carry out.
■ The recommendations should offer a specific plan of action for avoiding the threat.
■ The recommended actions must be seen as able to avert the threat.
■ The target audience must believe they are capable of carrying out the recommended actions[182] .

The objective to keep in mind is to convince people that they are capable of following the recommendations (self-efficacy perceptions) and that the recommended response really helps to avert or minimize the threat (response efficacy). To increase perceptions of self-efficacy, practitioners should identify barriers that inhibit a person's perceived ability to perform a recommended action, and then directly address these barriers in a message. To increase perceptions of response efficacy, practitioners should clearly outline how, why, and when the recommended response eliminates or decreases the chances of experiencing the threat.

In any case, the effects of fear appeals are far from clear and unequivocal. When designing a fear appeal, it is therefore very important to do thorough research and pre-testing to clarify the significance and possible influence of all of the variables mentioned above[183].

Fear appeals are an extreme case of what is called "loss framing", which consists of underlining the negative consequences of not following the message's recommendations. Framing will be discussed further below.

Framing

Framing has to do with whether people evaluate information regarding risk in terms of gain (positive framing) or loss (negative framing)[184]. Messages themselves can focus on the advantages derived from adopting the recommendations, or the negative consequences of not adopting them. In a campaign against speeding, for example, a loss-framed argument could be "If you don't slow down, you could lose your life", while its gain-framed counterpart would be "Slow down, your life is important"[184]. The kind of framing (loss-framed or gain-framed) can have an impact on the effectiveness of the message.

The *Prospect Theory*[185] represents the first attempt to formally outline the concept of framing in decision-making. The way of presenting information (here the main argument of a message) plays a role in the way it will be received by the target audience and in the audience's decision to act or not to act. People assess a problem differently according

to whether the outcomes are presented in terms of loss or in terms of gain. In uncertain situations, people usually prefer a potential risk to a sure risk, but the opposite applies as well – in situations of certainty, people usually prefer a sure benefit to a potential benefit[186]. Following this line of reasoning, message framing involves focusing either on gains or on losses linked to an adopted behaviour. More specifically, gain-framed messages emphasize the attainment of desirable states or the avoidance of undesirable states, whereas loss-framed messages emphasize the attainment of undesirable states or the avoidance of desirable states. Research on the effects of message framing has found that when prevention is at stake, gain-framed messages are more effective[187,188]. Although the studies did not assess messages directed at driver there are evidence to suggest that the same would apply to them.

Regarding these unequal effects of positive and negative information, the findings of studies on framing are far from unanimous. It is nevertheless clear that this approach has brought up a concept that is of great relevance to the field of road safety communication campaigns. It is difficult to say which of the two types of framing is most effective in a specific domain, insofar as the framing effect varies according to multiple factors (receiver's motivation to scrutinize the message, congruency between framing and motivation, area of risk, social normativity of risk behaviour, etc.)[189].

Messages based on humour

The humorous appeal is widely used in mass-media campaigns, with both a product-marketing and a social-marketing strategy. It is not difficult to remember a TV spot or advertisement that made us laugh or smile.

Humour has likewise been used in road safety campaigns, although not much research has been done on the effect of humour, whether in this field or in the arena of public health. Most research on the persuasive effect of humour has been conducted in commercial advertising, and it is questionable whether results obtained in this field can be directly transferred to public health or road safety.

As we have seen earlier (see *Theories that explain persuasion and change at a general level*, pp. 70-71), according to the *Elaboration-Likelihood Model*[118,170], persuasive messages are processed differently depending on the audience's degree of involvement with the issue in question. Humour can play a role in the way messages are processed[191,192].

There are a number of ways in which humour can be effective in persuasion[191]. For example, humour can:
- Create positive affect (according to persuasion theory, people who are in a good mood are less likely to disagree with a persuasive message).
- Increase liking for the source of the message.
- Increase trust in the source of the message.
- Block systematic processing of the message by distracting the audience from coming up with counterarguments.

Two main characteristics of humour-based messages are their high level of recall and their normative reciprocity, which can be summarised as follows:

High level of recall. One of the principle reasons for the widespread use of humour in mass-media campaigns is the satisfactory level of *recall* by the target audience. Although recall of a campaign as such is not an index of its effectiveness, the high recall levels related to the use of humour warrant further investigation. Several studies have shown that people pay more attention to a humorous message than to a serious one. However, too much humour can interfere with message understanding and recall[193].

Norm of reciprocity[194]. In an information-based society – where nothing exists unless it is communicated and the flow of messages received by the audience is endless – messages based on humour are a kind of "payment" by the advertiser in exchange for some attention from the audience. In other words, the advertiser gives the audience something it likes (humour) in return for something the advertiser needs (the audience's attention). This is one possible explanation for the widespread use of humour in communications.

It has also been shown that humour can have a stronger impact when the attitudes of the audience are already positive[195].

Message source: Who is going to say it

The message source includes both the messenger who delivers the message and the organisation that sends it, along with other campaign partners. Both can be characterized in terms of status and credibility (expertise, trustworthiness, attractiveness, etc.).

Types of sources

Two main message sources can be distinguished: organisations and testimonials.

Organisations. Institutions and organisations may generate persuasive messages, and the credibility of the organisation can be an important factor in influencing people's attitudes and behaviours[196].

Spokesperson or testimonials. The use of a spokesperson or a testimonial to deliver the message and thus to promote target-audience identification with the campaign is a common and widely-used practice (for more information, see *Choosing the campaign identifiers,* pp. 230-233)[197].

An alternative can be to use *role-model messages*. The principle here is to create stories involving real people (e.g., celebrities)[198].

Source credibility

Source credibility has an influence on message effectiveness. In fact, it is the most important determinant of persuasion when the message issue is not relevant to the target audience[199].

We can distinguish three dimensions of source credibility: expertise, trustworthiness, and attractiveness.

■ Expertise refers to "the perceived ability of the source to make valid assertions", that is, the extent to which the communicator is qualified to provide valid and accurate information or discuss a particular subject[200].

■ Trustworthiness is "the perceived willingness of the source to make valid asser-
tions". It thus refers to an audience's belief that the communicator provides informa-
tion in an honest, fair, sincere, and honourable manner[201].

■ Attractiveness refers to the source's perceived social value, such as physical appear-
ance, personality, social status, or similarity to the receiver[169]. Physically attractive
endorsers are often better liked by audiences; this has a positive impact on attitude
changes and product approval.

The credibility of the source is also very important when the message is not an indi-
vidual person but rather a complex, institutional entity with a history of experience
and knowledgeableness to which the public has already been exposed. Aspects of
organisational credibility consistently include expertise, trustworthiness, and attrac-
tiveness, although prestige, competitiveness, and familiarity have also been defined
as organisational credibility factors.

Media choice

The *means or medium of communication* does more than just carry the message; it
also has a direct effect on the message itself. The message will be delivered within
the parameters of the medium used. For example, messages distributed by radio can
only convey spoken language (sounds), not visual elements. This will affect the way
in which the message is rendered (the choice of media will be discussed in *Main
advantages and disadvantages of the different types of media*, pp. 140-144).

The message: importance of a pre-testing procedure

Before launching the campaign, the message needs to be pre-tested on the target
audience, in its full context.

The pre-testing procedure is important and should always be implemented. It can
provide important indications about how the message works. Even the most experi-
enced professional in the field, after years of working with message design, cannot
be sure of how a message will be received and interpreted. Pre-testing alternate
messages with the target group aids message assessment so that the most credible,
effective, consistent, and clear message, and the one most likely to lead to changes
in behaviour, can be chosen.

What to pre-test

The purpose of the pre-test is to make sure the message fits with the characteristics
of the target audience. The information obtained through pre-testing is different
from that gained by an evaluation at the end of the campaign. A pre-testing proce-
dure, whether qualitative or quantitative, should try to answer the following ques-
tions. Is the message:
– appropriate for the target audience?
– understood as intended in the campaign goals?
– clearly stated?
– perceived as useful to the target audience?
– Well-recalled or remembered? (set quantitative, minimum recall parameters)
– Provoking unexpected feelings or reactions in the target group?

If the pre-test outcomes indicate any doubt or misunderstanding on any of the above issues, a further analysis of the structure, style, and content of the message must be done before launching the campaign. Once the message has been revised, further analysis of the message on the target groups, in its full context, is necessary before proceeding to the next step.

Pre-testing methods and strategies

There are several methods for pre-testing a campaign message (for more information on pre-testing methods, see Boulanger, et al., 2007)[202]. Below, we provide an overview of the most frequently used procedures and tools, while pointing out the positive and negative aspects of each one. Quantitative and qualitative methods should be regarded as complementary, allowing results to be combined (data collection techniques are detailed in *Defining methods and tools for collecting data*, pp. 254-259).

Interviews

Interviewing the target audience about the message is a widely-used method of pre-testing campaign material. Generally, the interviews are conducted by professionals. Interviews can be more or less structured (via narrative scripts) giving more or fewer opportunities to the interviewee to use his/her own words. The choice of interview type will depend on the kind of data to be collected. Unstructured and semi-structured interviews facilitate the collection of qualitative data, whereas structured interviews are used for collecting quantitative data.

Focus groups

Using a focus group is a popular qualitative technique in research and serves many purposes, from stimulating the creation of new concepts and ideas to the evaluation of specific topics. In our case, the focus group would be composed of target audience representatives who are invited and directed by a professional moderator to discuss the campaign message(s) from all aspects: has it been understood correctly, was the information clearly stated, how is the message perceived, recalled, or remembered by the target audience? The purpose of staging a focus group is to check if the message is appropriate for the audience. The results of focus-group testing are essential for understanding how the message will be received and interpreted by the target audience. In order to obtain reliable and useful results, the focus group should be composed of a carefully selected sample, and the professional leading the group should have broad experience in the field (for more details on focus group, see Stanton, Hedge, Brookhuis, Salas & Hendrick, 2005)[203].

Thought-listing task

The *Elaboration-Likelihood Model* (ELM)[170] and the *Heuristic-Systematic Model* (HSM)[171] postulate that there are two routes to persuasion, reflecting different depths of message processing (for more details, see pp. 70-72). To investigate how receivers in a target audience process the message, the thought-listing task is recommended. The think-aloud technique is often the only way to gather detailed information about the mental processes involved in meaning generation during communication.

The purpose of this task is to bring out how individuals evaluate (favourably or unfavourably) information to which they are exposed. It points out knowledge,

attitudes, and behaviours. "*If the audience generates favorable thoughts about a message, persuasion results; if counterarguments are produced, resistence results*." (Petty & Cacioppo, 1981, p. 310)[170]. The principle behind the thought-listing task is to collect verbalisations from a subject immediately after his/her exposure to a message[204] (the message can be in writing, on a screen, on a tape, etc.). This provides information about the audience's immediate reaction to the stimulus before the message recipients begin to elaborate the message.

The interviewer simply asks the subject to listen to or read the message and then to verbalise the ideas that come to mind immediately after hearing or seeing the message. The following instruction is widely used: "*Tell me everything that passed through your head while you were listening to (or reading) the message*" (Shapiro, 1994, p. 4)[205]. "*If the most common time used is to be 2 or 3 minutes[170], the better procedure seems to instruct participants to stop themselves when they find themselves pausing more than 15 or 20 seconds between memories*" (Shapiro, 1994, p. 8)[205]. The number of reported ideas, the number of ideas linked to the preventive message (assumed to be linked to systematic treatment), and the number of evaluative ideas (assumed to be linked to heuristic treatment) are determined for each participant.

The validity and usefulness of conclusions concerning the message's possible impact can be measured by the number of verbalisations and their orientation (for or against the message)[206]. If people recall more arguments in favour of the message, we can conclude that information processing occurred at a deeper level (systematic or central processing). If they do not, we can conclude that the information was processed through the heuristic or peripheral route (see *Elaboration-Likelihood Model*, pp. 70-72).

The quantity and orientation of message-relevant thoughts will depend on the extent to which the receiver is willing or able to process the message. Receivers who are motivated and able to elaborate the message should have predominantly favourable thoughts when exposed to a message with strong arguments; a receiver who is less motivated or less able to process the message will pay less attention to the arguments in the message and will therefore be less responsive to the arguments' quality[207]. The quality of verbal data collected via this method is usually very good. The thought-listing task can be the first part of a questionnaire.

Questionnaires

The message can be presented within the questionnaire or in other formats (TV, radio, leaflet, etc.). Some questions about the message are asked, especially ones for the thought-listing task, and then questions on knowledge, beliefs, and behavioural intentions are presented. Questionnaires can be structured or semi-structured, containing either short-answer questions, forced-choice questions, or both. They can be either administered by interviewers or self-administered by the participants (a sample from the target group). The advantages of quantitative questionnaires are well known: they are less expensive than individual interviews and provide statistical results that are easy to analyse and display, even for people who are not experts in the field. For example, the *Health Message Testing Service* (HMTS[208]) is a standard

testing system that can be used to assess written and visual messages. The HMTS proposes a short, semi-structured questionnaire that tests for attention, comprehension, personal relevance, reliability, acceptability, and possible unwanted side effects of a message (data collection techniques are detailed in *Defining methods and tools for collecting data*, pp. 254-259).

Conclusion

The message delivered is critical in any communication process. This section has discussed message-content strategy in detail to aid campaign designers in tailoring the message to fit the target audience's characteristics and the communication context in which it will be received. Once this strategy has been developed, it needs to be put into action; this requires developing the message-execution strategy, which consists of defining the structure of the message, the emotional versus rational approach, the style of the message, and the framing of arguments. Pre-testing the message is an essential step. It allows campaign planners to determine whether the message is well designed and will get through to targeted recipients.

2.5 Means and features of communication campaigns

Road safety communication campaigns often rely on a variety of communication means or "tools". Each tool has its own unique set of features and is utilized according to the type of message and the goal of the communication – whether informing, raising awareness, modifying knowledge, beliefs and/or behaviours etc. In this section, we will present possible means of communication and factors influencing the choice of suitable media and supportive activities. In addition to the more traditional ways of communicating a message we will also look at some other promotional supports that can be used in the framework of a road safety campaign. Then we will focus on the variables related to media placement such as the frequency, periodicity, size and positioning of the message.

Means of communication

Choosing the appropriate means of communication is essential for reaching the target audience and for making sure the message is heard. The choice will depend on factors related to communication type, target audience, media characteristics, and costs.

Communication type

Different types of communication are available; they operate on different scales, from the broadest to the most limited. Communication can be achieved through the mass media, through more selective channels, and/or through interpersonal communication.

Mass-media communication

Mass-media communication is also called non-personal communication. It reaches large groups of people. Mass media provide identical information and entertainment to a broad audience with relatively little selectiveness. Mass-media communication influences the audience directly, and also indirectly by generating interpersonal communication on the campaign topic.

Mass-media communication channels include major media, atmospheres, and events[190].
– *Major media* include print media (newspapers, magazines, direct mail, etc.), broadcast media (radio, television), display media (billboards, signs, posters, etc.), and online media (e-mail, websites).
– *Atmospheres* are designed environments that reinforce the message of the campaign (e.g., an environment in a bike store that motivates cyclists to buy a helmet).
– *Events* are staged occurrences that help communicate messages to the target audiences; they include events like press conferences, shows, etc. First, the event reaches the target-audience members, who participate in it (direct target); once media attention is focused on the event, it can reach a larger audience (indirect

target). Indirect targets will often be reached by television, radio, and/or newspaper coverage. This is often referred to as free publicity or earned media.

Selective communication

Selective communication relies on various channels designed to reach specific target groups simultaneously. Such channels enable communicators to provide more intensive information at the same time as it permits more accurate targeting of segments of the audience. Selective media may supplement mass-media efforts. "*Selective media are used when target markets can be reached more cost-effectively through targeted media channels; target audiences need to know more than the information available in mass media formats […]. Typical appropriate media types include direct mail, flyers, brochures, posters, special events, and the Internet.*"[138]

Interpersonal communication

In interpersonal communication, two or more people communicate directly with each other, whether face-to-face, over the telephone, through direct e-mail, or through an Internet "chat". This approach is recommended when detailed information needs to be explained or when there are barriers that make it necessary to build trust or to gain commitment.

Interpersonal communication includes a recently defined medium called viral marketing, which is essentially based on the principle of word-of-mouth. This means of communication can happen on the Internet, via SMS, etc. The possibilities of viral marketing are exponentially enhanced by the use of electronic means of communication. It applies to any strategy that encourages individuals to pass on a marketing message to others, thereby creating the potential for exponential growth in the message's exposure and influence. Such strategies are cheap and take advantage of rapid dissemination to transmit the message to thousands or millions of people.

Target audience factors

Target audience factors will determine how completely and effectively a given medium and its accompanying supportive activities reach the target audience.

An important consideration here is *aperture* (i.e., opening), which is related to the target audience's general habits and interests (leisure activities, mode of transportation, etc.) and to its media preferences (which media channels people use at which moments). In other words, the idea is to find out where and when the target audience is most likely to be receptive to a campaign message[209].

The media channels are frequently chosen to reach the campaign's principal target audience[210], but this is not always the case. Research shows that in certain situations, the secondary target can influence the principal target to adopt the safe behaviour. For instance, the campaign can be aimed at young male drivers' friends (peer group) in view of having them influence their male friends not to drive while intoxicated.

Media-related factors

When choosing media channels and supportive activities, it is helpful to consider a number of factors related to their appropriateness and their ability to convey the

message as clearly and effectively as possible. These factors can either be related to the media itself, or to how it is used (see Box 12).

Box 12 ■ *Media-related factors*

Media-related factors can be classified according to the following criteria: (a) factors proper to the medium itself and (b) factors related to the usage of the medium.

A *Factors proper to the medium itself*
–   Geographical selectivity (e.g., regional vs. national TV channel).
–   Socio-demographic selectivity (e.g., tabloid vs. highbrow newspaper).
–   Information capacity (e.g., a website can contain much more information than a 30-second radio spot).
–   Visual quality (e.g., possibility of using colour vs. black and white advertisements).
–   Multimedia quality (possibility of integrating moving images, sound, text, etc.).
–   Lifespan: length of time the message is present (e.g., daily newspaper vs. monthly magazine).
–   Level of attention: capacity to attract attention.
–   Flexibility of production cycle (fast or slow, opportunity to modify the message, etc.).
–   Noise ratio (i.e., number of competing messages that attract attention).
–   "Pacing": either *internal pacing,* where the target audience decides on the moment and tempo of information (e.g., printed piece, internet) or *external pacing*, where the communicator decides on the moment and tempo of information (e.g., radio, conventional television).

B *Factors related to usage of the medium*
–   Reach: the proportion of a defined target audience exposed to the advertising during a specified time period.
–   Effective reach: the proportion of the target audience exposed to effective frequency over the advertising campaign period.
–   Adstock: the impact that advertising has over time and after the end of a burst of advertising.
–   Wearout: loss of an advertisement's effectiveness with repeated exposures.
–   Boredom and habituation: when individuals see novel stimuli, the novelty leads to uncertainty and tension; repeated exposure reduces the uncertainty and tension, leading to familiarity and liking.
–   Exposure: any opportunity for a person to see and/or hear an advertising message in a particular media vehicle, expressed by OTS (Opportunities To See) or OTH (Opportunities To Hear).
–   Frequency: the number of times a person is exposed to a media vehicle or media schedule within a given period of time.
–   Cumulative reach: the number of people reached in case of repeated exposure.

–   Media duplication: the overlap in the reach of different media.
–   "On the spot" presence (especially for road safety communications): ability to deliver the message on the spot and at a time that is related to the theme of the message (where the safe behaviour is expected).

(Adapted from Kotler & Armstrong, 2006[190]; American Marketing Association Dictionary of Media Terms[211]; Nielsen Media Research Glossary of Media Terms[212]; Bilsen, Van Waterschoot, & Lagasse , 2000[213])

Cost of media and supportive activities, and available budget for the campaign

Naturally, the budget of a campaign has a great impact on what media to use and the opportunity to use supportive activities.

The cost of running a media campaign includes both the cost of producing and the cost of inserting the produced material.
–   Production cost: this is the cost of producing the advertisement for the chosen media. Production costs can differ greatly from one medium to another. For example, the cost of producing a TV spot (video) is much higher than that of producing a printed advertisement.
–   Insertion cost: this is the cost of renting the media space or using media time to broadcast the advertisement. Insertion costs will differ widely between media and also between specific media vehicles. For example, the insertion cost for a TV spot may be much higher than for a newspaper advertisement, depending on the time and place of insertion, and the type and reach of the media vehicle (highly specialized vs. general audience, national/regional/local reach, etc.).

Although it is recommended to use a combination of media in a single campaign (see *Some key elements for increasing the effectiveness of campaigns: learning from the past,* pp. 95-112), this may not always be feasible due to budgetary constraints.

Main advantages and disadvantages of different media

As mentioned above, the choice of media is dictated largely by the target audience and the media's characteristics, including costs, advantages, and disadvantages (see Tables 7, 8, and 9, adapted from Andreasen & Kotler, 2003[209]; Bilsen, et al., 2000[213]; De Pelsmacker, Geuens, & van Den Bergh[214], 2005; Goubin 2002[215], Kotler & Armstrong, 2006[190]; Parente, 2004[210]).

Table 7 ■ Main advantages and disadvantages of audiovisual media

Audiovisual media					
Advantages			**Disadvantages**		
Television	***Reach and selectiveness***	***Information capacity, lifespan, attention***	***Cost***	***Reach and selectiveness***	***Information capacity, lifespan, attention***	***Cost***

	Advantages			**Disadvantages**		
Television	***Reach and selectiveness*** ■ Very large reach in general segments ■ Selective in specific segments ■ High frequency in specific audiences ■ Accessible to everyone	***Information capacity, lifespan, attention*** ■ Allows for more complex messages ■ Combines audio and video ■ Possibility of eliciting emotions in target audience	***Cost*** ■ Most cost-efficient to reach large audience	***Reach and selectiveness*** ■ Low useful reach	***Information capacity, lifespan, attention*** ■ Short-lived duration of messages (seconds)	***Cost*** ■ High production cost
Radio	***Reach and selectiveness*** ■ Large reach ■ Good for reaching local audience ■ High selectivity ■ Dynamic ■ Allows for on-the-spot presence	***Information capacity*** ■ Good as reminder ■ Stimulates imagination ■ Possibility of eliciting emotions in target audience	***Cost*** ■ Low production cost	***Information capacity, lifespan, attention*** ■ Low attention ■ Short lifespan ■ Fleeting duration of message ■ Not for complicated messages		
Cinema	***Reach and selectiveness*** ■ Selective ■ Low noise ratio	***Information capacity, lifespan, attention*** ■ High attention ■ Allows for more complex messages ■ Possibility of eliciting emotions in target audience		***Cost*** ■ High production cost		

Table 8 ▪ Main advantages and disadvantages of printed and outdoor media

Printed media						
	Advantages			**Disadvantages**		
Newspapers	**Reach and selectiveness** ▪ Excellent at reaching mass audience ▪ Large reach in general ▪ Allows geographical selectivity, e.g., local audience	**Information capacity and lifespan** ▪ High credibility ▪ Flexible ▪ High information capacity ▪ Short lead time		**Reach and selectiveness** ▪ Poor demographic selectivity	**Information capacity and lifespan** ▪ Poor reproduction quality ▪ Short lifespan	
Magazines	**Reach and selectiveness** ▪ Excellent at reaching segmented audience (and pass-along readership)	**Information capacity and lifespan** ▪ Long lifespan ▪ Excellent reproduction quality		**Cost** ▪ High insertion cost	**Information capacity and lifespan** ▪ Slow production cycle ▪ Not flexible ▪ High noise ratio ▪ Long life span ▪ Low frequency ▪ Long lead time ▪ Topic of campaign has to rely on editorial content (can also be an advantage)	
Flyers, leaflets, brochures	**Reach and selectiveness** ▪ High selectiveness	**Information capacity** ▪ Allows for complex messages	**Cost** ▪ Low cost	**Information capacity, lifespan, attention** ▪ Low attention		
Direct mailings	**Reach** ▪ Selective communication ▪ Excellent for relatively small target groups and opinion leaders ▪ High information capacity			**Information** ▪ "Junk mail" image ▪ Need for address lists		

Outdoor media				
	Advantages			**Disadvantages**
Billboard posters	*Reach*	*Lifespan*	*Cost*	*Information capacity*
Small-size posters, banners Variable message signs	■ High exposure ■ Able to reach the audience nearly everywhere / exposure near (on-the-spot presence) ■ Geographically selective	■ Long lifespan	■ Low cost	■ Low attention ■ Low information capacity

Table 9 ■ *Main advantages and disadvantages of interpersonal communication and electronic supports*

Interpersonal communication				
Advantages			**Disadvantages**	
Face-to-face Events, personal discussions, group discussions, forums, lectures, speeches, exhibition stands	*Information capacity* ■ Effective ■ Involvement of target group		*Reach* ■ Low exposure	*Cost* ■ High cost per contact
Telephone	*Reach* ■ Possibility of reaching people more than once		*Reach* ■ Low reachability scale ■ Need for address lists, people do not like it	*Cost* ■ High cost per contact
Electronic supports				
Advantages			**Disadvantages**	
E-newsletters, direct e-mailings, sms, Internet discussion forums, viral marketing	■ Provides effortless transfer to others ■ Utilizes existing communication networks (e.g., family, friends, co-workers, customers) ■ Takes advantage of others' resources (relay messages by placing links on 3rd party resources) ■ Low cost		■ Need to simplify the message so it can be transmitted easily and without degradation ("The shorter the better") ■ Audience controls exposure	
Internet websites	*Reach* ■ High selectivity	*Information capacity* ■ Interactive, flexible ■ Allows for complex messages	*Cost* ■ Low cost	*Reach* ■ Low impact ■ Audience controls exposure

Additional promotional supports

In addition to communicating through the media, campaigns can include a number of other supporting activities to promote and reinforce the campaign message (see Box 13).

Box 13 ■ Other types of promotional supports

–   Public relations: successful public relations and lobbying efforts generate free, positive mention of the campaign programme in the media (this is called free publicity), e.g.:

■ Stories on TV and radio
■ Articles in newspapers and magazines
■ Special events: meetings, conferences, exhibits, demonstrations, etc.

–   Special promotional items: campaign messages can be reinforced and sustained through the use of special promotional items, e.g.:

■ Clothing (T-shirts, caps, hats, etc.)
■ Temporary items (lapel buttons, balloons, stickers, mascots, door hangers, etc.)
■ Functional items (key-chains, pens & pencils, bookmarks, notepads, bags, drink coasters, etc.)

–   Popular media

■ Songs
■ Movie scripts, TV, and radio programmes
■ Comic books, comic strips, etc.

–   Social networking websites (YouTube, Facebook, etc.)
–   Virtual communities (Second Life, etc.)

(adapted from Kotler et al., 2002)[138]

The use of these kinds of support may involve selecting, organising, and/or training personal communicators or mediators who will play key roles in distributing the materials and delivering the campaign messages. These may include outreach workers, facilitators, volunteers, healthcare providers, professionals, educators, counsellors, local officials, and so on.

Media plan and media placement

The media plan includes a schedule of the types of media to be used, the media vehicles, and the timing and phasing of exposures. It often combines different media into a coordinated campaign, either concurrently or consecutively to create a synergistic effect.

Using a combination of media has several advantages:
– Greater reach and coverage of the campaign.
– Greater media exposure.
– Greater conspicuousness of the message, impression that it is everywhere.
– Complementary nature of different media with respect to their technical capabilities (e.g., TV makes for high visual and audio impact, print media accommodate more information).

The disadvantages are:
– Possible loss of dominance in one medium (i.e., spreading budget over several media risks dilution of message).
– Extra production costs.

The variables related to media placement are established in a media plan that fits into the larger marketing and communication strategy. These variables are:

■ Frequency (number of repeated exposures).
■ Periodicity (way in which exposures are scheduled to be spread over time).
■ Message size and location (actual size of printed advertisements; duration of TV and radio advertisements; position in the media vehicle, which for print media is the actual location in the newspaper or magazine, and for audiovisual media is the position within the programme).
■ Characteristics of the media vehicle (actual radio or TV channel or programme, magazine or newspaper title, etc.).

Frequency

Frequency refers to the number of times an audience is exposed to an advertisement over a given period of time. To talk about the average number of exposure times, the term "average frequency" is commonly used[149].

In order for the advertisement to elicit any response at all, a certain minimum frequency will be required; this is called effective frequency. The effective frequency is the optimum number of exposures required to effectively convey the advertising message to the desired audience[211]. At lower frequency levels, the message will barely get noticed by the target audience. As the frequency increases, the likelihood of the message getting noticed increases, resulting in a greater response rate.

Above a certain frequency, the gain (in terms of response to the message) will decrease rather than increase, so any additional exposure will have a very low cost-benefit ratio.

There is a long-standing debate as to what effective frequency is the best for (commercial) advertising messages. We know that a message generates a three-stage response in the target audience:
– First, it breaks through and gets attention.
– Second, it establishes relevance and a basis for persuasion.
– Third, it reminds or consolidates (either positively or negatively).

Two exposures might be sufficient[216], although some research on the impact of short-term advertising shows that the most vigorous response immediately follows the first exposure[217]. It is generally agreed in the industry that three exposures is the minimum effective frequency to ensure that a campaign yields satisfactory results (Three Hit Theory[218]). However, for large and well-established brands with high market availability, a single exposure may be all that is needed for an effective commercial[149].

Apparently, there is no one-size-fits-all solution, since the ideal effective frequency depends on various factors such as type of medium, characteristics of the media vehicle, the learning and forgetting curves of the target audience, brand familiarity, message complexity, and message novelty. However, *"communication planning theory is not really about arcane mathematical formulas. It's about people, and the way they react to messages, learn from them, act on them (maybe), and then forget them again."* [219]

Periodicity

Periodicity is the way in which exposures are scheduled to be spaced out over time. Periodicity may be influenced by:

–   The theme of the campaign: a theme might be more relevant in a specific period when the conditions related to the problem occur most frequently. For example, in a campaign on weekend accidents in which young drivers are targeted, the campaign will preferably be concentrated on the weekend days when young people go out.

–   The goal of the communication: for instance, when the communication is divided into several waves or phases, the first wave of exposure will serve to attract attention. The successive waves will repeat the message, in keeping with the target behaviour and the audience segments, and will serve as a reminder so that the audience will grow accustomed to the message. To obtain higher levels of attention, the extent of exposure in different waves can also be alternated according to the behaviour one wants to trigger and the characteristics of the target segments. To this end, one should consider:

■   The ideal moment to address the target audience or target groups ("right place, right time" principle), i.e., when the audience is about to choose between alternative behaviours.

■   The moment at which the target audiences or target groups are available and receptive ("openings").

■   Audience turnover, i.e., the rate at which the target audience or target groups change between two periods (the greater the turnover, the more continuous the advertising should be).

■   Behaviour frequency, i.e., the number of times the target audience or target groups perform the problem behaviour (the more frequent the problem behaviour, the more continuous the advertising should be).

■   Forgetting rate, i.e., the rate at which a given message will be forgotten or a knowledge, belief, and/or behaviour change will be extinguished (the faster this rate, the greater the need for continuous advertising).

Timing has two dimensions: cyclical (or seasonal) and short-run[209].

Concerning cyclical timing, audience size and interest will vary at different times of the year for most products and services. A majority of marketers do not advertise when there is little interest, spending the bulk of their advertising budgets during periods when natural interest in the product or service is on the increase and/or at its peak. The concept of aperture or "openings" is relevant here[209], e.g., a campaign about winter driving conditions should be run in autumn or winter; this is called cyclical or seasonal timing.

Short-run timing has to do with how the advertising is spaced out during a short period. In this case, there are three possibilities: burst advertising, continuous advertising, and intermittent advertising.

■ *Burst advertising*: all exposures are concentrated in a relatively short period of time (a few days to a few weeks). This approach, which is also known as the concentration strategy[149], will attract maximum attention and interest. It is used more and more in road safety, especially in particularly relevant situations (e.g., for drinking-and-driving campaigns, it is recommended to resort to burst advertising around Christmas).

■ *Continuous advertising*: exposures appear evenly throughout the period. This may be most effective when the audience needs to be continuously reminded.

■ *Intermittent advertising*: intermittent small bursts of advertising appear with no advertising in between. This approach, which is also known as flighting[149], elicits more attention and still offers the "reminder" advantage of continuous advertising[209].

Message size and location

Message size and location are important, since in general, the larger or more prominent a message is, the more it will get noticed. The effect of message size is relative to the impact of competing messages. For instance, in a magazine with very few advertisements, even the smallest advertisement will get noticed; where there are a lot of large advertisements, however, smaller advertisements will be overshadowed by the others.

The positioning of the insertion will also influence its prominence. For instance, messages that are located at the beginning or end of a page, publication, or advertising block will generally get more attention than those placed in the middle, where "competition" with other messages is greater. In some countries, special billboards along the motorways are reserved for road-safety messages, with other forms of publicity being prohibited there. This exclusive location greatly increases the salience of the road-safety messages on these billboards.

Characteristics of media vehicles

Each type of media covers a large number of media vehicles. In addition to the characteristics specific to the type of media, each media vehicle has specific features in terms of geographic, socio-demographic, and/or thematic selectivity. Also, qualitative characteristics such as credibility, prestige, and psychological impact are an important part of the identity of each media vehicle. These characteristics may have a (strong) influence on opportunities for inserting the message, and on the way it will be perceived by the target audience.

Some of the selectivity dimensions are:

■ Geographic selectivity: national/regional/local media vehicles (TV and radio stations, newspapers, etc).

■ Socio-demographic selectivity: magazine titles geared to specific age groups (children, adolescents, seniors, etc.), women's magazines, men's magazines, and so on.

■ Thematic selectivity: general news and information, magazines focused on popular interests or pastimes (e.g., cars, gardening).

■ Credibility: a message in a prestigious international newspaper will have much greater credibility than a message in a local magazine (for more information on message credibility, see *Theories that explain persuasion and change at a general level*, pp. 68-73).

Conclusion

The choice of appropriate media and the placement (space and time) of the message in those media are critical for reaching the target audience and for the message to be received. Factors related to communication types, target audience, media characteristics, and costs are brought to bear in choosing which media to use. Exposure frequency and periodicity, and the features of media vehicles are important considerations in drafting the media plan.

2.6 Evaluating campaigns

An evaluation involves the systematic collection and analysis of information about important aspects of the campaign. It requires a methodological strategy in order to determine the campaign's effectiveness in terms of whether and to what extent it attained the predefined road-safety objectives.

In this section, we will discuss the reason why it is important to evaluate campaigns, and we will present different types of evaluations. Campaigns are often carried out in combination with other supportive activities, which can create problems when it comes to assessing the campaign's effects. Ways of overcoming some of these problems will be discussed elsewhere. This will be followed by a presentation of statistical issues such as sample size and how to analyse the data. The section will end with a discussion of the fundamental limitations and constraints of campaign evaluations.

Importance of evaluating road safety communication campaigns

The evaluation of a campaign is an important step that should not be neglected. It allows campaigners to determine whether the campaign met its objectives or not. In other words, it tells them if a campaign led to any changes that can be measured[132]. Some important variables in this respect can be accidents, injuries, and casualties, and/or overt behaviours, knowledge, attitudes, perceived risk, risk apprehension, and self-reported behaviours. The term *outcome evaluation* is used here.

Evaluations are also essential if in the future, we want to be able to benefit from previous campaigns and avoid past mistakes. It is therefore necessary to publish the results and make them available in various databases (e.g., the European Road Safety Observatory www.erso.eu, which provides a theoretical framework, or the RoadSafetyWeb www.roadsafetyweb.net) so that a corpus of knowledge can be compiled in the field of road safety campaigns (see *Some key elements for increasing the effectiveness of campaigns: learning from the past,* pp. 95-112). Before designing a campaign, it is important to learn from previous campaigns that have been rigorously evaluated (see Table 10).

Table 10 ■ Utility of an evaluation, by type of campaign (current vs. future)

Utility of an evaluation	
To the current campaign	**To future campaigns**
Learning whether the proposed materials are suitable for the target audience	Providing useful information in order to minimise the risk of implementing inappropriate future campaigns
Knowing if the campaign is reaching the target audience	Providing information to reach similar target groups
Supervising the implementation of the campaign, and intervening in the operation of the project if needed	Providing information to improve the implementation of future campaigns
Testing the theoretical framework of the campaign	Providing useful theoretical frameworks
Making sure the campaign reaches its objectives	Demonstrating accountability to the funding sources, stakeholders, policy makers, and the public
Finding out whether the campaign has any unexpected benefits or problems	Collecting good ideas and avoiding poor ones
Demonstrating the campaign's cost-effectiveness and efficiency to its financiers or to society	Facilitating future fund raising

Different types of evaluations

There are several types of evaluations that can be conducted for road safety commu-nication campaigns. These include formative, process, outcome, and economic evaluations[1]. The formative evaluation is a prerequisite to the others. The different types of evaluations are described below and summarized in Figure 28.

Formative evaluation

Before implementing the campaign and launching the campaign-evaluation process, a pre-evaluation must take place. This is called the formative evaluation. It serves the following purposes:
– Improve campaign components.
– Assess campaign elements in relation to the target audience and chosen media before they have been finalized.

The formative evaluation consists of running one or more pre-tests in order to get feedback concerning which campaign components are working and which need to be changed. It allows for making changes in the early stages on three levels: the

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1   Process and outcome evaluations are sometimes called summative evaluation.

message (based on feedback from the thought-listing task for instance), the material (TV spots, billboards), and teamwork (adherence to campaign objectives, work method, and organisation).

The formative evaluation also consists of pre-testing and improving the actual tools needed for the evaluation. Several pre-tests are usually needed to improve these tools. For instance, if the objective is to change speeding behaviour, a questionnaire will be designed to test the campaign's effects on knowledge, beliefs, and/or self-reported behaviour. The questionnaire must be based on the theoretical model that was used to identify the main predictor(s) of the problem behaviour. The questions should be pre-tested to ensure that they are serving the intended purpose.

The formative evaluation can be carried out using two methods: qualitative and quantitative.

Qualitative methods use open-ended questions, and include interviews, focus groups, observation, and document analysis. The data collected are non-numerical and classified into categories. Interviews can be unstructured or semi-structured. An unstructured interview starts with a question, perhaps about speeding, and then the matter is discussed at some length. In a semi-structured interview, the interviewee is given a set of possible questions to answer. However, the structure does not have to be followed in a strict manner and additional questions may be discussed. Qualitative methodology is especially valuable for investigating complex or sensitive issues, and also whenever the researcher needs to achieve a deep understanding of the issue. Of course, qualitative data can be coded quantitatively[220], although this is not always the main purpose of a qualitative study.

Quantitative methods are based on the collection of numerical data to be used in statistical analysis. Quantitative data-gathering techniques include questionnaires and observations. Techniques for data collection (by phone, mail, online, face-to-face or non-intrusive) range from non-directive interviews to standardized surveys (i.e., structured interviews), depending on the type of data to be gathered and the characteristics of the concerned population (e.g., online surveys may be appropriate for a young target audience but not for an older one). Table 11 outlines some differences between qualitative and quantitative research.

Figure 28 ■ Evaluation process according to the evaluation objectives, criteria, and types.

Objectives of the evaluation	Pre-test *before launching the campaign*	Criteria for the evaluation	Types of evaluations
Measuring whether the campaign: ■ is operating as planned (implementation and teamwork) ■ is reaching the target group	**FORMATIVE EVALUATION** ■ Collecting data on programme operations to be able to make changes in early stages ■ Desiging evaluation tools **Tasks to perform** For each target group and campaign objective, testing and improving: ■ message ■ material ■ teamwork ■ evaluation tools	■ **Testing objective exposure:** operational sequences ■ **Testing subjective exposure:** awareness of the campaign	PROCESS EVALUATION
Measuring whether the campaign attains its ultimate objective: to improve public health, and more specifically, road safety *e.g., to improve safety for cyclists* **Based on a reference model or a planned strategy**		■ **Ultimate criterion for testing the intended effect (dependent variable):** casualties, accident rates, or injuries *e.g., head injuries among cyclists,* overt behaviour ■ **Unintended effects** *e.g., reduction in cycling*	OUTCOME EVALUATION
Measuring whether the campaign attains its specific objectives: initiating or changing ■ knowledge ■ beliefs ■ behaviour		**Testing the effects:** ■ knowledge ■ beliefs (attitude, perceived control …) ■ self-reported behaviour ■ Risk apprehension ■ etc.	SUMMATIVE EVALUATION

EFFECTIVENESS OF CAMPAIGN

Measuring the campaign's cost-effectiveness and efficiency (maximising net benefits)		**Economic measures:** ■ **Cost-effectiveness analysis → CEA:** – direct and indirect campaign development costs, costs of media placement, – effects of campaign in non-monetary terms (e.g., number of lives saved), ■ **Efficiency → CBA (cost-benefits analysis):** – direct and indirect campaign development costs, costs of media placement, – benefits of campaign in monetary terms (decrease in accident costs)	ECONOMIC EVALUATION

EFFICIENCY / COST – EFFECTIVENESS

Table 11 ■ Some differences between qualitative and quantitative research [221]

Dimension	Quantitative	Qualitative
Aim of the research	Preparation	A way to establish the actor's interpretation of the situation
Relationship between researcher and participant	Distant	Close
Researcher's standpoint	Outsider	Insider
Relationship between theory and research	Confirmation	Development
Research strategy	Structured	Unstructured
Nature of results	Nomothetic	Idiographic
Format of results	Numbers and statistics	Words
Nature of information	"Hard", reliable, can be replicated	Rich and deep

Process evaluation

Process evaluation takes place during the campaign and is used for determining whether the campaign has been implemented and is working as planned. It is not a way to test the effects of a campaign, but it adds insight to the outcome evaluation by answering the following questions: Did the implementation take place as planned? How many paid and unpaid stories came out in the media? Was the target audience aware that there was a campaign on this theme? Did they know and/or understand the message of the campaign?

Depending on the campaigner's involvement and insight into the campaign process itself, a process evaluation might address the following areas:
■   Was the target group pre-tested before the campaign started? For instance, were the group's dominant beliefs established?
■   Was an action plan produced and if so, was it followed?
■   What means of communication was used?
■   Did the level of cooperation among campaign team members possibly affect the results (e.g., disruptions caused by people leaving)?
■   Was there cooperation between campaign partners, including strategic partners?
■   What kind of supportive activities were carried out?
■   What was the total exposure – the total number of people exposed to the campaign (i.e., number of people listening to the radio programme, number of readers)?

■   Were the campaign elements implemented as intended?

■   In what context and circumstances were the campaign components implemented?

■   What was the duration of the campaign? For how long was the target audience exposed to the campaign elements (e.g., how long was the poster up, how long did the radio programme last, how many times was it broadcast, etc.)?

The results of a campaign are also affected by external factors, some of which should be followed up on during process evaluation (for example, media coverage on the same topic as the campaign but not directly related to it, political changes, other campaigns, other factors that could enhance or hinder the campaign objectives, etc.).

A process evaluation can also be divided into objective and subjective aspects, which deal with different aspects of exposure[220].

–   **Objective exposure** is a measure of campaign implementation. Measuring the objective-exposure rate helps in understanding the results of the outcome evaluation. Moreover, it is a warning system that facilitates quick action on any potential problems (e.g., if there are not as many TV spots as scheduled, it will be possible to demand that the TV station adhere to the scheduled number). Data collected for this evaluation are the number of TV/radio/cinema spots, broadcasting times, frequency and duration, earned media, audience figures, numbers of billboards/posters/ variable message signs and brochures, and leaflets distributed. For this analysis, you can either count each person who has been exposed to the campaign one or more times, and/or you can count each separate exposure of any member of the target population (see Box 14)[220].

Box 14 ■ *Target Audience Rating Points (TARPs)*

For most types of media placement, there are measures of "target audience rating points" (TARPs), i.e., the percentage of the target audience exposed, multiplied by the average frequency of seeing/hearing the campaign message.

One rating point (TARP=1) is equivalent to 1% of the target audience seeing an issue/spot of a campaign once. More than 100 TARPs implies repeated exposure for at least part of the audience[222]. Reporting TARPs in campaign evaluations can be useful for assessing the campaign's impact over time, as well as its cost-effectiveness and economic efficiency.

–   **Subjective exposure** concerns the target group's awareness of and interest taken in the campaign (TV, radio, cinema, etc.), but also the time spent looking at and reflecting upon the message itself, e.g., outdoor-publicity spots seen. Qualitative and quantitative data are generally used to measure subjective exposure. The recall of the campaign is the most popular index of campaign awareness and is often used with commercial messages.

Recall and recognition of the arguments in the persuasive message are sometimes wrongly used as the only measure in evaluating the campaign. Focusing on memory is problematic because awareness is a measure of media exposure and not a true measure of the effect of the campaign[132]. Current models of persuasion have long since demonstrated that memory is a poor predictor of attitudinal and behavioural change[223]. However, awareness can be a moderating variable, that is to say, a variable that affects the direction and/or strength of the relationship between an independent variable (presence or absence of the campaign) and dependent variables (variables on which the effect of the campaign is measured) [1]. Awareness, then, is an indicator for interpreting outcome-evaluation data.

Take, for example, a road safety campaign aimed at reducing speeding among young people. The campaign is implemented in an experimental area and not in a control area, and then a comparison is made between these two areas. Thus, the independent variable is the campaign's presence (experimental area) or absence (control area). The dependent variable compared is observed speed, which can include things like the percentage of drivers who abide by the speed limits or drivers' average speed. If there is no effect of the campaign on the dependent variable, this can be attributed to the fact that either people were not aware of the campaign, or if they were aware of it, the message was too insignificant to have an impact on their behaviour.

Outcome evaluation

The ultimate aim of many road safety communication campaigns is a reduction in accidents, fatalities, or injury severity (according to official road accident databases, see pp. 180-182). An outcome evaluation tells us whether the campaign reached its specific objective.

Road crashes, injuries, and fatalities as outcome measures

For road crashes, injuries, or fatalities (as main effects in the outcome evaluation), it may be possible to use crash data (property damage, personal injuries, fatalities) from several sources:
–   Official accident statistics.
–   Statistics from insurance companies.
–   Hospital statistics.

When analysing official statistics, it is important to remember that they were compiled for purposes other than the evaluation. Therefore, they may not provide important details or information needed for the outcome evaluation, such as the time of the accident (one may only be interested in night accidents), day of the accident (one may need to distinguish between accidents during the campaign period vs. accidents before and after), specific cause of the accident (one may be interested only in speeding-related accidents), whether the accident involved the specific behaviour linked to the theme of the campaign (one may want to compare accidents with and without seatbelt wearing), etc.

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1   In statistics two different variables are mentioned; dependent and independent. The dependent ones cannot be controlled by the experimenter (i.e., number of accidents, people's intentions or behaviour) whereas the independent ones can (i.e., attitudes, norms).

Furthermore, it is important to consider other factors that might influence the outcome variable(s), such as societal trends, new laws, events reported in the news, etc. It is quite possible that any of these could be the reason for the observed changes rather than the campaign itself. These are usually called "confounding" variables.

When measuring effects of campaigns by means of accident data only, it is important to be cautious, for the following reasons:
–   Accidents are rare events and it will be difficult to detect significant changes from one year to another.
–   Accidents are influenced by multiple factors, not just the problem behaviour targeted by the campaign. Therefore, even if a control-group assessment suggests a reduction in accidents, one cannot be sure that the effect is due to the campaign, because there may be confounding influences.
–   Official injury statistics are not intended for testing against specific hypotheses. That is, the official data may not be detailed enough to study the particular problem under investigation.

Behaviour as an outcome measure

A very common substitute for crash data, as an outcome measure, is data obtained by measuring a change in a behaviour that has some known relationship to risk of death or injury. Examples of such behaviours are driving speed, alcohol/drug use (BAC levels), and seatbelt wearing[224]. In this approach, a good methodology is needed to separate the outcome of the campaign from confounding factors (e.g., regular and seasonal trends, unforeseen events, new laws, highly publicized accidents, or other related issues).

In most road safety campaigns, behavioural change and/or the difference in behaviour between the experimental group and the control group can be used as a variable for the outcome evaluation. The data to collect in this case are overt behaviours, which are taken as objective measures of the effects of the campaign (e.g., offences, random breath testing to measure blood alcohol concentration, seatbelt wearing) or subjective measures (e.g., self-reported behaviour).

It is absolutely necessary to make sure that one is actually measuring the behaviour targeted by the campaign. For instance, to evaluate a seatbelt campaign, it is possible to collect very precise data on seatbelt wearing (observed or self-reported behaviour).

Economic evaluation

Common methods

For the economic evaluation of a campaign, one must know the cost of the campaign.

Cost of the campaign

Besides an assessment of the effects of the campaign (outcome evaluations), the costs of the campaign should be measured. The cost of a road safety campaign is made up of essentially two major components:[222] cost of developing a campaign of

a certain quality that addresses a given topic (concept research, production costs) and cost of media placement, i.e., television advertising or other types of publicity (cost per target audience rating point).

■   The campaign development/production costs (which may also include evaluation costs) can be further divided into:
■   Direct costs (variable costs) of the particular campaign
– labour, materials, and expenses used directly in developing and producing the campaign (whether purchased externally or internally or already available in the organisation responsible for the campaign).
■   Indirect costs (fixed costs or overhead) that are not directly related to the particular campaign
– rent, depreciation of buildings or equipment, taxes, electricity, insurance, indirect labour (e.g., storekeepers).
■   The costs of media placement are of course direct costs that may vary in intensity and duration.

Furthermore, the total implementation cost of a campaign may include costs of operation and maintenance that will be incurred at a later stage. To make future costs and present costs comparable, either future costs must be pegged to a chosen base year (e.g., present time) or the total implementation costs must be converted to annual costs.

It is vital for any economic evaluation to include all of these cost components in the campaign evaluations. Normally, media-placement costs should be readily available. Also, the direct costs of campaign development will most often be available from the campaign budgets or financial reports. The indirect costs of campaign development will, in most organisations, be calculated simply by using a percentage of the direct costs.

If these cost figures are not published, it will invalidate the economic assessment or at the very least, increase the uncertainty of the evaluation results.

Methods of economic evaluation: cost-effectiveness analysis (CEA) and cost-benefit analysis (CBA)

There are two commonly used methods for performing economic evaluations: CEA and CBA. Being able to quantify the (non-monetary) effects CEA or benefits CBA of a campaign is a crucial part of economic evaluations of road safety campaigns.

The first method, CEA, is generally done when benefits or outputs are not (or cannot be) evaluated in terms of money. It relates costs of programmes to performance by measuring outcomes in a non-monetary fashion. It is useful when comparing methods of achieving a specific objective on the basis of lowest cost or greatest effectiveness (quantified outcome or impact) for a given campaign cost.

The second method, CBA, helps determine how to maximize the net benefits (economic efficiency) of a programme. It consists of translating into economic terms

the safety outcome (as well as possible side effects of the campaign) and comparing these benefits to the costs.

Both methods constitute economic evaluations of the use of different resources, and both measure costs of campaigns in the same way. Where these two economic assessment tools differ is in the analytical questions that can be answered[225,226]:

■ CEA measures costs associated with the implementation of a programme (e.g., campaign) in monetary terms (e.g., euros). However, the benefits arising from the intervention are expressed in non-monetary terms (e.g., number of saved lives). CEA is designed to identify the most economically effective solution to a given objective among different interventions of equal costs. Alternatively, it will find the intervention with the lowest cost that still meets campaign objectives. Thus, CEA can only be used to ascertain the effectiveness of an intervention with respect to accomplishing a particular objective.

■ The aim of CBA is an economic one: to implement (public) projects and interventions that maximize net benefits. There are two main approaches used in (European) countries to convert the safety outcome to a monetary value:

–   One approach measures the increase in overall economic net benefits from so-called "consumer surplus" changes. All relevant costs incurred by the campaign are compared with its economic benefits, defined in terms of the sum total of society's willingness to pay for the safety benefits and reduction in (risk of) fatalities/injuries due to the campaign.

–   The other approach is a "resource-oriented" one. Here, the economic benefits are defined in terms of the productive resources that the economy has saved (this can also be termed a "cost-savings approach", which differs from the consumer surplus or willingness-to-pay approach).

In both approaches, CBA estimates costs and benefits arising from the implementation of a campaign in monetary terms (by multiplying impact units by prices per unit). Thus, in CBA, the efficiency of a campaign can be compared to the efficiency of any other road safety measure – CBA assesses the absolute allocative efficiency of an intervention[227,228,229].

These two methods of economic evaluation, CEA and CBA, are associated with different steps in the chain of campaign outcomes. Hence, each method is limited to evaluating only particular effects or objectives *(see also *Completing the evaluation and drawing conclusions,* pp. 279-288).

Economic evaluation as part of a campaign development process

Economic evaluations (CEA and/or CBA) will be applied to pre-determined priorities for road-safety measures within the framework of a national or local road-safety programme, although the prioritisation of safety measures is rarely based on full *ex-ante* evaluations of the measures that are considered. Economic evaluations are normally made before implementation; this is called an *ex-ante* assessment of effectiveness or efficiency. However, it is also useful to conduct economic assessments of campaigns that have already been implemented, i.e., to do an *ex-post* assessment. Just like other types of evaluation, economic evaluation allows for systematic monitoring and control of road-safety programmes. Economic evaluation should

constitute one of the main factors that enter into these decisions. Monitoring and controlling the implementation of road-safety measures (e.g., campaigns) is an essential step in every systematic evaluation process (see Figure 29).

Figure 29 ■ Scheme of a systematic economic evaluation by process control and ex-post control

Systematic Monitoring and Controlling of Campaign Implementation
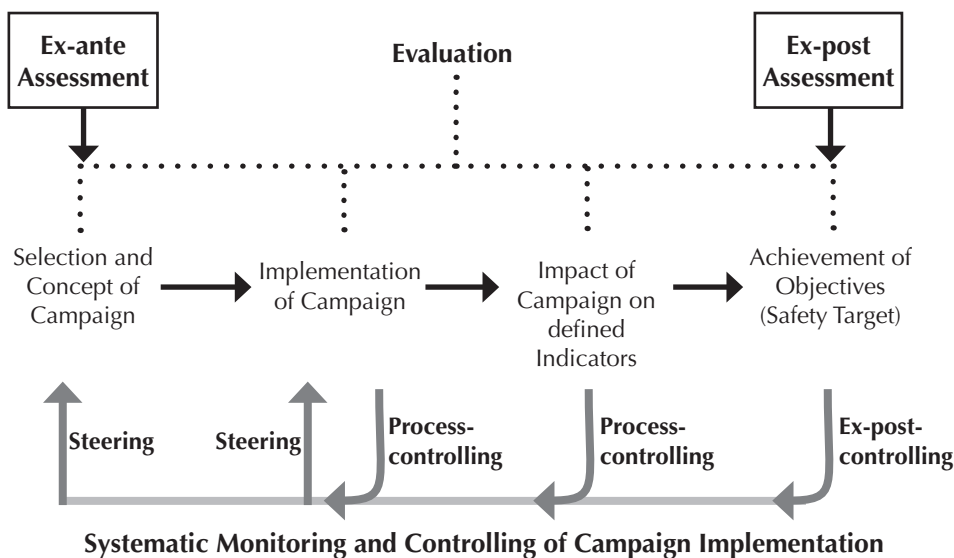
1   Monitoring and controlling implementation: the plan for implementing a certain road-safety measure or programme (e.g., a campaign) and the actual development of the campaign should be compared at specific milestones. Process control should identify any problems or barriers to implementation.

2   Monitoring and controlling effects/outcomes: the expected effects of the measure should be compared with actual results by using defined target variables and indicators. At this stage, measures with unsatisfactory results or unintended side effects should be identified and avoided.

3   Monetary evaluation of outcomes: a comparison of ex-ante and ex-post evaluation results should be performed. This step allows for assessing the efficiency of road-safety measures to be considered in future decisions about implementation and budget planning.

All steps provide the decision-maker with information for revising, reorganising, or guiding road-safety activities. The last two steps are particularly useful for deciding where to allocate funds, i.e., to profitable measures and not to low-yielding ones.

In order to evaluate a road safety campaign via a *cost-benefit* or *cost-effectiveness analysis*, certain additional information is needed. Although CBA – unlike CEA – enables the practitioner to take several campaign side effects into account (e.g., environmental impact, mobility effects), the core effect (outcome) assessed is the

road-safety aspect. Both CBA and CEA involve assessing the potential for road safety as well as the total implementation costs of the campaign.

Evaluation designs: different designs and their use in isolating campaign effects

In order to achieve a reliable campaign evaluation, it is essential that the design of the evaluation be based on a scientific study of available designs. In the past, this was not always done: "*Evaluation designs seem to be more the consequences of organisational constraints – specific to each country – than the result of a scientific examination of available designs that are most likely to detect significant effects of a predetermined minimum size*"[132].

What is the best or most feasible design for producing the needed evaluation data? The major strength of a communication campaign – its ability to reach a wide audience – is paradoxically the greatest challenge for evaluation.

To assess a change in dependent variables, at least two measurements are needed. That is to say, the campaign should be evaluated with at least two measurements on one dimension. At least one of these two measurements should occur during a pre-campaign (before) period (baseline measurement)[132].

Sound methodological principles suggest that before-and-after designs are not sufficient to avoid a possible confounding of the effect with concomitant factors[132]. The evaluation of campaign effects requires data from at least two groups: people who were exposed to the campaign (experimental group) and people who were not exposed to the campaign (control or comparison group). Control groups and comparison groups are sometimes used as synonyms, but strictly speaking, a control group is drawn at random from the same population as the group exposed to the campaign. However, this is usually very difficult, especially if the campaign utilizes media that will be broadcast to both groups. In that case, the researcher can use comparison groups.

The presence of a control or comparison group will help determine whether changes in accident rates or behaviour were due to the campaign itself or to some other factors unrelated to the campaign (i.e., confounding variables). For instance, in case of a drinking-and-driving campaign, the outcome evaluation may reveal a reduction in alcohol-related accidents. However, this reduction could be caused by the implementation of a new law (e.g., 0.5 instead of 0.8 BACs) and not by the campaign. The use of control groups will show whether both groups have demonstrated the same changes; if they have, then it can be concluded that the changes were not due to the campaign itself.

Evaluation designs

Four broad categories of evaluation design can be distinguished: non-experimental, quasi-experimental, experimental, and single-case experimental.

Non-experimental designs

The most common non-experimental design is the before-and-after design (OXO, where O represents a measurement and X the intervention) (see Table 12). Non-experimental designs do not use control or comparison groups. They only measure the effects of an intervention on an experimental group, i.e., a group that is exposed to the campaign.

Table 12 ■ *Diagram of the non-experimental design*

	Before	**Intervention**	**After**
Experimental group	O	X	O

Quasi-experimental designs

Quasi-experimental designs use either multiple groups or multiple measurements (i.e., more than one group or more than one measurement). However, the reason these designs are termed "quasi" is that they do not select the control and experimental groups in a random fashion. In order to achieve randomness, the experimenter must have total control over the situation and be able to allocate participants to one or the other group through a completely objective, chance procedure (e.g., flipping a coin). Obviously, this is almost impossible when working in the field rather than in a laboratory.

Hence, a quasi-experimental design compares experimental subjects exposed to a campaign with subjects from a *supposedly* similar population not exposed to the campaign (i.e., a comparison group). In addition, the measures used to compare the two groups are selected prior to the intervention. These can be taken from other groups not involved in the experiment, or the same subjects prior to the intervention[132].

It should be noted that failing to use random assignment can create a "selection bias". Selection bias can lead to misleading conclusions about an intervention's true impact and its actual worth to society. However, a well-designed quasi-experimental design, if executed with statistical sophistication and while recognizing its limitations, will provide good information about the impact and effectiveness of the intervention which is certainly better than no evaluation at all[132].

The most frequently used quasi-experimental designs that are appropriate for evaluating road safety campaigns are:
–   A time-series design (with matching measures).
–   A separate pre-post sample design (with a before- and an after-period evaluation and the use of comparison groups) (see Table 13).

Table 13 ■ Diagram of the separate pre-post samples design

	Before	**Intervention**	**After**
Experimental group	O	X	O
Comparison group	O		O

Experimental designs (randomized control trials)

A true experimental design uses at least one experimental group and one control group (in the strictest sense). In order to draw clear conclusions about potential relationships between factors one must use a randomized experimental design in which participants are randomly assigned to multiple groups (two or more). In other words, the participants are randomly drawn from a well-defined target population and assigned to either the intervention-exposed group or the control group.

Random selection balances the differences across groups and ensures that the sample is representative, which enables the results to be generalized across the entire target population[230].

Experimental designs are normally considered the strongest of all evaluation designs in terms of internal validity. Internal validity is used to describe situations in which true causal inferences can be established. For example, the fact that it can be shown that the attitude of those exposed to the campaign became more positive does not necessarily mean that this attitude change was caused by the campaign itself. It is possible that some other variable or factor caused the outcome[220]. There are several potential threats to internal validity that may undermine a true cause-and-effect relationship[230]. A more sophisticated evaluation design (one with at least one reference group or with multiple measurements) will help avoid data misinterpretations that are due to a lack of internal validity.

Possible experimental designs include[220,231]:
– Two-group, after-only randomized designs (with an after period using a control group and an experimental group).
– Two-group, before-after randomized designs (with a before and an after period using a control group and an experimental group) (see Table 14).
– Multiple time-series randomized designs (with matching measures).

Table 14 ■ Diagram of the two-group, before-after randomized design

	Before	**Intervention**	**After**
Experimental group	O	X	O
Control group	O		O

In short, the essence of an experimental design is to create a setting wherein the presence or absence of an intervention is the sole factor that distinguishes the two groups. However, as already discussed, this is very difficult to achieve, especially in real-life settings where it is almost impossible to have absolute control over all possible extraneous variables that could have an impact on the results. For this reason, experimental designs are rarely used in road-safety research because it is seldom possible to randomise the participants and/or the areas where the campaign will/will not be implemented.

Single-case experimental designs

A single-case experimental design is a study whose aim is to examine the effects of an experimental manipulation or intervention on only one test subject (one participant, one group of participants, one organisation). The single case will be the participant, group, or organisation. In this case, there is no control group or comparison group. Data for the single-case experimental design are collected several times – before, during, and after the campaign.

A single-case experimental design allows to determine how one variable influences another. For instance, this method can be applied in the area of attitude and behaviour changes to assess the effects of one or more interventions on one group of subjects. This design is very suitable for outcome evaluations of road safety campaigns.

The A-B-A design (or A-B withdrawal design; see Table 15) is essentially a three-condition design in which the conditions are "phases" that extend over time and in which a sequence of tests or observations will be taken in each phase. In this design, the target behaviour is clearly specified and measurements are carried out through all three phases. In the A or baseline phase, natural occurrences of the target behaviour or behaviours are monitored; in the B phase, the treatment variable is introduced; this is followed by withdrawal of the treatment (A).

The central notion here is that the researcher removes the intervention (B) and looks for a return to baseline performance. The return to the baseline level demonstrates the influence of the treatment variable on the behaviour (see Table 15).

Table 15 ■ Diagram of the A-B-A design (or A-B withdrawal design)

	A phase	**B phase**	**A phase**
Experimental Group	O	X	O

How to isolate the effects of a campaign

It is not easy to measure the effects of a campaign in isolation, because campaigns will often be accompanied by other supportive activities such as enforcement or special events. Two methods are particularly useful in isolating the effects of a campaign: comparison groups and time-series analysis.

Multiple interventions/multiple intervention groups

To isolate the effects of a campaign that has been combined with supportive activities, different phases and elements of the campaign should be compared using a before-after design (or a repeated-measures design or a time-series analysis) and setting up groups of participants, with each group assigned to each element of the programme (e.g., media, enforcement, education, etc.). The groups may be compared before and after the implementation of each element. This comparison allows for measuring the effect of each programme element. Comparing one element to another should facilitate measurements of their relative outcomes. For this reason, two other groups might be added: one of these might be a group not exposed to the programme (control or comparison group) and the other, one exposed to the entire programme.

Let us take the example of an integrated programme including two elements: media and enforcement. To evaluate the campaign and to measure the effect of each component of the programme on the chosen dependent variable(s), such as accidents or behaviour, at least four groups will be compared to each other: one group exposed to the media element only (Group 1), one exposed to the enforcement component only (Group 2), one exposed to the whole programme (media + enforcement) (Group 3), and one without any exposure at all (Group 4), which constitutes the control group. At least two measurements will be compared for each group: one before and one after the implementation of the elements (see Table 16).

Table 16 ■ Isolating the effects of an integrated programme

Pre-/Post-measurement	Media	Enforcement	No programme
Group 1	Only media		
Group 2		Only enforcement	
Group 3	Whole programme		
Group 4			Neither media nor enforcement

This design involving multiple intervention groups is useful in countries big enough for the programme to be implemented differently in different areas (cities or states). The media component will require the use of local media (in order to avoid contamination), which might not be possible in smaller countries.

Statistical issues

Sample size

Choosing how many people will be included in the study (i.e., sample size) is a very important decision to make during the design of a campaign (see *Choosing the evaluation design and sample*, pp. 250-254). Unfortunately, there is no single answer to this question, since sampling is affected by factors such as campaign purpose, complexity, time and budget constraints, etc. Nevertheless, sample size affects the degree to which results can be trusted. A rule of thumb is to determine the necessary sample size according to the degree of precision that is needed. This means that if different age groups are to be analysed and if the effect of driving experience must also be considered, then the sample size should be larger than if the whole group is going to be compared with a control group. Furthermore, one has to bear in mind that depending on the sample size, some analysis methods (presented below) may not provide the statistical precision required and should therefore be avoided.

Data analysis

Data analysis is the process of systematically applying statistical and/or logic techniques to describe, illustrate, condense, and evaluate data[232]. Various analytical procedures "*provide a way of drawing inductive inferences (i.e., to form conclusions about unobserved events based on observed events – cause and effect) from data and distinguishing the signal (the phenomenon of interest) from the noise (statistical fluctuations) present in the data.*"

Depending on the study, the data to be analysed are *qualitative* and/or *quantitative*. Qualitative data is usually nominal (i.e., categorical, as in man versus woman). Quantitative data is either ordinal or interval-based. Like nominal data, ordinal data has categories, but it is usually measured on a scale. For example, the scale can be from 1 to 7, where 1 means "strongly disagree" and 7 "strongly agree". Interval data are *continuous* (height, time, weight)[233].

Various analysis methods exist, mainly distinguished by whether they are descriptive or inferential. *Descriptive statistics[220]* are used to describe the basic features of the data in a study. They provide simple summaries about the sample and the measures, and include calculations of central tendencies (e.g., mean and median) along with measures of data dispersion (e.g., standard deviation). Together with simple graphs, they are the basis of virtually every quantitative analysis of data. The kinds of graphs and charts generally used for this purpose are histograms, box plots, scatter diagrams, and line charts.

Inferential statistics, on the other hand, use estimation and *hypothesis testing* to assess the evidence of whether a difference between two or more groups on a population parameter (a mean, variance, proportion, etc.) is likely to have arisen by chance or whether some other factor is responsible for the difference.

Statistical data analysis enables two hypotheses to be tested. The *null hypothesis* states that the observed differences between the two groups (e.g., between the intervention group and the control group) were obtained by chance, while the *alternative*

hypothesis states that the differences are real. Furthermore, two types of errors may occur in this type of analysis. Type I errors refer to rejecting the null hypothesis when it is in fact true (false positive). Type II errors refer to accepting the null hypothesis when it is false (false negative). The goal is to minimize the probability of making any type of error.

Most studies set this probability, known as the *significance level*, at .05. A significance level of .05 indicates that there is a 95% chance that the results are due to the experiment and not to chance. In statistical tests, *p-values* are calculated to represent the probability of obtaining an outcome as extreme or more extreme than the observed study result under the assumption that the null hypothesis is true. If the *p*-value is less than the significance level, the result is considered statistically significant (e.g., $p < .05$). When *statistical significance* is not observed, either the null hypothesis is true (i.e., no difference really exists) or the sample size was not large enough to detect a difference (insufficient statistical power)[233].

Fundamental limitations and constraints

Effect size depends on baseline level

The size of a campaign's effect can depend on the initial or "baseline" level of safe behaviour. Effects of campaigns will be smaller when a small proportion of drivers only (early adopters) or a large majority of drivers have adopted the target behaviour[132] (adoption of a new behaviour generally follows an S-shaped curve). "*The higher the baseline level of the relevant measure of effect is, the smaller the expected impact of the campaign is*"[135]. This is an important factor to consider when examining the cost-effectiveness of campaigns.

Stability of effects

Campaigns may show important effects in the short term (e.g., one week after the end of the campaign), but this does not automatically mean that the effects will continue in the long term after the campaign has ended. Some effects may persist; others may fade over time. To get a better picture of effect stability, it is important to have evaluations at different times: during the campaign, shortly after the campaign has ended, and later, say, six months after the campaign is over.

What happens when the campaign ends?

Most of the time, a single campaign is not sufficient to bring about large, lasting changes in behaviour. The effect of a campaign will decrease rather quickly once the campaign is over. As in commercial marketing, the issues treated in road safety campaigns need to be kept in front of the public in order to remain "on the agenda". This is the only way to achieve a substantial, permanent change in behaviour. If the issue moves out of the public eye, the risk of a relapse into old (undesirable) behaviours is always present.

There are several "marketing tricks" that help keep the campaign issue on the agenda and increase the time over which campaign effects last. Some examples are:
–   Split up a campaign into different phases or "waves" of high visibility, alternated with "off" periods when the campaign is at a lower profile.

–   Keep the campaign issue "alive" in public discussions: TV and radio shows, press articles, etc.
–   Distribute trinkets that act as campaign reminders.
–   Refer to the campaign each time enforcement actions dealing with the campaign issue are organised, and vice versa (integrate communication and enforcement).

Working with aggregated data

It is not unusual to evaluate communication campaigns by focusing on aggregated data such as accident rates in the population. Interpreting aggregated data without taking individual data into account is dangerous; this is called the *ecological fallacy*. For example, to assume that a reduction in alcohol-related accidents is due to a road safety communication campaign against drinking held during the preceding months is not justified even if a survey shows that awareness of the campaign in the population was high on the average. This can be a problem, because those who had an accident were perhaps aware of the campaign while those who did not have an accident were not aware of it. Another problem is what is called the *regression effect*. It is quite possible that the number of accidents decreases after the campaign, but the effect might not be due to the campaign itself. If the number of accidents in the previous year was very high, the high rate could have been due to some very extreme events. In this case, the effect will tend to *regress* downwards toward the mean, something that would have happened even if the campaign had never been launched.

Conclusion

Evaluating a campaign according to defined objectives and a theoretical model is an important step in the campaign process. It includes different types of evaluations, namely, formative, process, outcome, and economic.

Before the campaign is launched, a formative evaluation (using qualitative and/or quantitative methods) helps in improving programmes (i.e., tools needed for the evaluation) and in assessing ongoing projects during campaign development. Then, as the campaign is being run, a process evaluation determines whether or not the campaign is working as intended. Next, an outcome evaluation indicates whether the campaign met its objectives (e.g., reduction of accidents or changed behaviour), and finally, an economic evaluation (i.e., cost-effectiveness and cost-benefit analysis) provides information on whether the effects of the campaign justify its cost.

Concerning evaluation design, making before and after measurements and introducing control or comparison groups are the main elements of a properly executed evaluation that allows one to draw clear conclusions. Finally, a sound evaluation is also extremely helpful in designing future campaigns as well as in attracting sponsors and partners.

Part I Chapter 2 ■ Summary

Campaign types and marketing-strategy factors

Road safety communication campaigns can involve paid advertising and/or earned media, and they can be combined with other supportive activities such as legislation, education, reinforcement, and/or highway engineering; they can be integrated campaigns, or they can be part of a medium-term or long-term integrated programme.

The design and implementation of such campaigns should involve social-marketing principles, marketing-strategy factors, and the "four P's" of the marketing mix – Product, Price, Place, and Promotion – plus an additional P, Possible supportive activities.

Some key elements for increasing the effectiveness of campaigns

In order to improve future campaigns, it is necessary to identify the key elements that contribute to making a road safety communication campaign successful. This can be achieved via qualitative and quantitative methods. Qualitative studies (descriptive studies) focus on what, how, or why something is happening. Quantitative studies (meta-analyses) do structured reviews of past empirical research on a specific topic.

Descriptive studies can provide campaign practitioners with important informa-tion, not only on the specific processes to implement but also on the general characteristics of campaigns. However, a useful descriptive study must have a well-planned procedure. At present, there are relatively few studies that have used this method to assess the effects of campaigns. Three such studies are reported here; the conclusions drawn in these studies are comparable, and they all stress the need to divide the population into target groups and segments.

Meta-analyses conducted by organisations in various countries cite elements that will improve the chances of success for road safety communication campaigns. These elements include basing the campaign design on a theoretical model, addressing the campaign to a specific target group, using persuasion and emotional appeals in the message, supplementing the campaign itself with supportive activities such as traffic-law enforcement, relying on qualitative research, and reporting on the campaign.

Planned programmes can also provide a valuable starting point for developing a road safety communication campaign. Precise steps need to be taken: iden-tify an effective campaign, propose the successful campaign to a consortium of countries, share knowledge, analyse cultural differences and legal restrictions, consider the baseline behaviour, become familiar with local traffic laws and driver's licence procedures, etc.

Each road safety communication campaign should be unique; therefore, when basing a programme on past initiatives, the past campaign and its successful components should be analysed, revised, and adapted to the new situation (region, country, target audience).

Target audience

A key success factor for road safety communication campaigns is proper identification of the target audience (primary and secondary audiences), since this pinpoints the best way to reach the targeted individuals. The task of identifying the target audience should be based on sound methodology: problem definition, context analysis, road-user analysis, and up-to-date knowledge of the targeted behaviour. Moreover, segmenting the target audience enhances the likelihood that the message content and strategy will reach and engage the intended audience.

Identifying a target audience for a road safety communication campaign using segmentation techniques requires three steps:
1.   Segmenting the primary and secondary audiences according to demographic, geographic, psychographic, and behavioural variables, or based on theoretical model(s).
2.   Evaluating, selecting, and prioritising the segments according to factors affecting the allocation of resources or the campaign's strategy, effectiveness, and efficiency scores, etc.
3.   Choosing one or more segments for targeting.

Once the segments that will be targeted have been delineated, it is possible to define the best communication strategies and means for reaching each segment according to its particular characteristics.

The message

An effective message strategy based on the communication objectives is essential for the success of the campaign. The message strategy can be subdivided into the content strategy (what will be said) and the execution strategy (how and by whom it will be said).

The message-content strategy is directly related to the communication objectives, which depend in turn on the problem behaviour and its main predictors, the safe behaviour and its main predictors, and the target audience. Message content should be based on a theoretical model. A good message should be able to tip the balance of perceived costs and benefits in favour of the safe behaviour.

The message-execution strategy should be aimed at designing a message that captures the attention of the target audience. In order to do this it should take into account factors of persuasion likely to influence the target audience's behaviour as well as the audience's cognitive capacity and motivation. Persuasion models

like the Elaboration Likelihood Model or the Heuristic-Systematic Model may be useful here.

The elements of the message-execution strategy are the message structure, the style of the message, and message framing.

Concerning the message structure, two different strategies can be adopted. A one-sided message strategy only presents arguments in favour of the campaign theme or the knowledge and/or behaviour one wants to change, whereas a two-sided message strategy presents the arguments for and against the campaign's theme, and thus includes arguments to counter the opposing view.

The style of a message can be cognitive and rational, or emotional and non-factual, depending on the campaign objectives and the target audience's characteristics.

Rational appeals emphasize objective information content and deductive logic and they rely on cognitive processing. Emotional appeals emphasize feelings and images and make use of three levels of emotion: descriptive, empathetic, or experiential. Emotion-based appeals can either be positive (e.g., humour) or negative (e.g., fear appeal). The effects of fear appeals are far from clear and unequivocal. Fear appeals can be particularly effective when the message describes a threat and then provides recommendations for reducing or avoiding that threat. Messages based on humour can have positive effects, since humour can play a role in the way persuasive messages are processed by the target audience.

Several models can be used to devise a message based on a fear appeal. The Parallel Response Model distinguishes between a cognitive reaction (the danger control process) and an emotional reaction (the fear control process). The Protection Motivation Theory focuses on perceived threat and perceived efficacy as essential variables of fear appeals. The Extended Parallel Process Model (EPPM) combines the two preceding theories.

Whatever its design, the message is always framed in terms of either gains or losses; this has an impact on message effectiveness. Most of the time, gain-framed messages are more effective than loss-framed messages when preventive behaviour is at stake (e.g., respect the speed limit).

The source of the message is another important consideration. The message source encompasses both the messenger who delivers the message and the organisation that sends the message. Sources can be characterized in terms of status and credibility.

Finally, the means of communication itself has a direct influence on the message, since it affects the way in which the message is rendered.

A pre-testing procedure should be implemented to find out whether the message is appropriate to the target audience, and also to make sure it is understandable,

clear, perceived as useful, and recalled or remembered. Qualitative and quantitative methods (interviews, focus groups, questionnaires, a thought-listing task) can be used for pre-testing.

Means and features of communication campaigns

Road safety communication campaigns can rely on different types of communication (mass media, selective media, and interpersonal communication). These are chosen according to the communication strategy, previous actions and campaigns, the target audience, and the message.

Target audience factors as well as media-related factors should be taken into account when choosing the type(s) of communication, media, and media vehicles. Target audience factors include aperture (or openings), which is related to the audience's overall habits, general interests, and media preferences. Media-related factors include the ability of media vehicles and supportive activities to reach the target audience, as well as the information capacity of those vehicles and activities.

The media plan includes decisions on media types, media vehicles, and the timing and phasing of exposures. It is based on variables related to media placement (frequency, periodicity, timing, and phasing; size of the message; location in the medium).

Evaluating campaigns

Road safety communication campaigns should be properly evaluated in order to draw clear conclusions about their effectiveness with respect to predetermined objectives and the target audience. Moreover, results of evaluations should be disseminated in order to build a corpus of knowledge in the field of road safety. Evaluating also helps justify the cost of campaigns to parties or agencies providing the financing.

The first step in the evaluation process is a formative evaluation, which provides feedback about the campaign's components and evaluation tools. This step is needed to make improvements while the campaign is still being developed.

The effectiveness of the campaign is also measured by means of process, outcome and economic evaluations.
–   The process evaluation assesses whether the campaign is operating as planned and if it is reaching the target audience, by measuring objective and subjective exposure to the campaign. Results from this evaluation aid in interpreting the results of the other evaluations.
–   The outcome evaluation measures the effect(s) of the campaign on accidents and observed behaviours, knowledge, beliefs, self-reported behaviours, subjective norms, perceived risk, and risk apprehension.
–   The economic evaluation assesses whether the effects of the campaign justify its cost. Two types of economic evaluations are cost-effectiveness analysis (CEA),

which relates the cost of the campaign to its performance by measuring outcomes in non-monetary form, and cost-benefit analysis (CBA), which compares monetary benefits with the costs of the campaign and is a measure of its efficiency.

The evaluation design should be chosen carefully. It must include comparison(s) of at least two groups (one or more experimental groups and one or more control or comparison groups), and at least one before-period and one after-period measurement. Making several post-campaign measurements provides information on the stability of campaign effects. The size of the effects will depend on the baseline behaviour level. Moreover, to isolate the effects of a combined campaign, various groups of subjects must be compared, each one tested on a separate component of the programme.

PART II

Step-by-Step Guide for Designing, Implementing, and Evaluating a Road Safety Communication Campaign

This second part of the manual outlines six different steps for designing, implementing, and evaluating a road safety communication campaign. The information provided herein comes from interviews carried out with practitioners, advertising agencies, and researchers[1] in different countries, and from a review of the literature and our own experience.

Generally, the starting point of any intervention is a road safety problem that has been identified, usually by looking at statistics (e.g., road crashes, offences). The problem should then be studied to see if it can be solved by a road safety communication campaign alone, or whether the campaign needs to be combined with other supportive activities. Moreover, the campaign may be integrated into a planned programme with other campaigns and/or road-safety actions. This is an important point, because a road safety communication campaign is not always the most straightforward way to change a problem behaviour.

Even if you conclude that a road safety communication campaign will help in solving the problem, or at least in providing part of the solution, you might still be unsure as to how to proceed. Maybe you fear that the task will be too difficult – but rest assured, you probably have more knowledge and know-how than you think. Perhaps you are working with colleagues and partners who can be of some assistance or even make up part of the campaign team.

To update your knowledge, save time and money, and be well organised, you can follow six basic steps (see Diagram 1) that will guide you through the process of designing, implementing, and evaluating your road safety communication campaign. For the sake of clarity, the steps are presented as a sequence. However, be aware that they are interdependent and cannot necessarily be accomplished in a strictly sequential way. Indeed, a road safety communication campaign is guided by key decisions on everything from the overall goal to specific objectives, strategy and launch of the campaign, and even its evaluation. Sometimes, effective decisions and optimal work at one stage depend on feedback from a previous stage. This means that a given step may be revisited and further developed if necessary.

Once the six steps have been carried out, the cycle is complete. The conclusions that you have drawn from the campaign and its evaluation will give you the necessary input for the next campaign cycle.

In the following presentation, each step will be broken down into sub-steps that will be covered in some detail.

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1 Academics included.

Diagram 1 ■ *Steps in designing, implementing, and evaluating a road safety communication campaign*

1
Getting Started

2
Analysing the Situation

3
Designing the Campaign and the Evaluation

4
Conducting the Before-Period Evaluation and Implementing the Campaign

5
Completing the Evaluation and Drawing Conclusions

6
Writing the Final Report
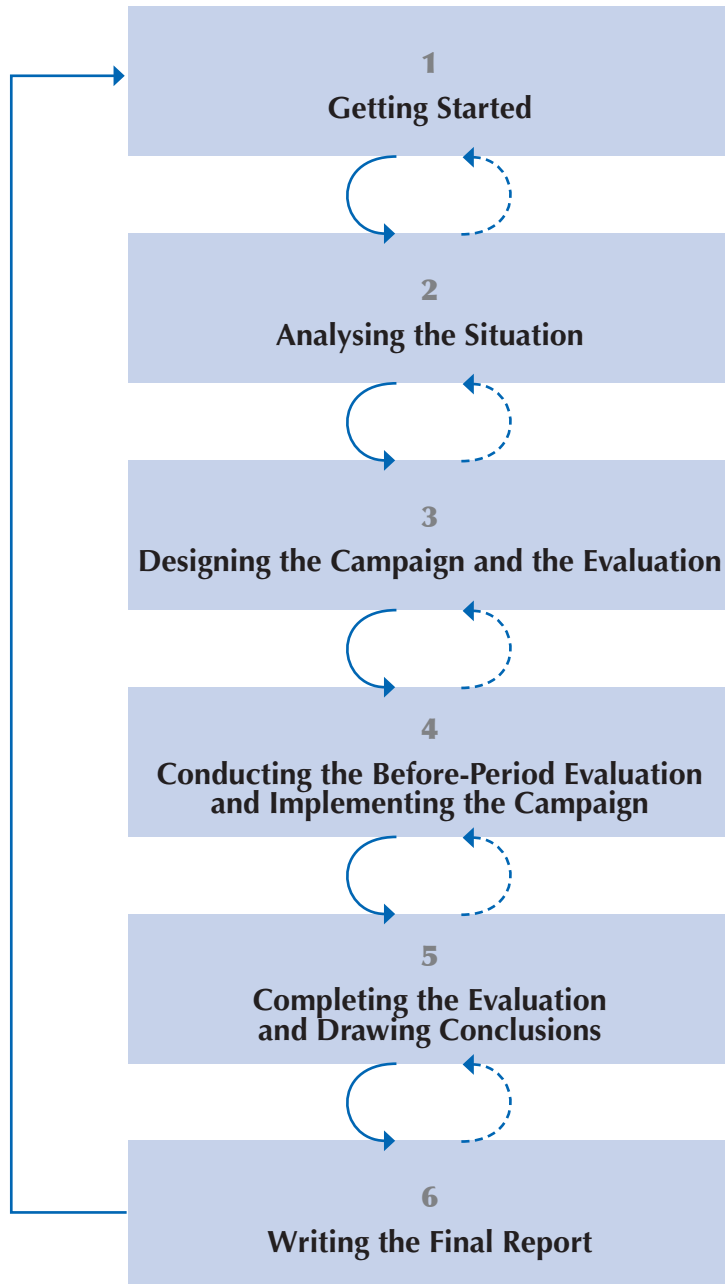
Getting Started

You are going to carry out a road safety communication campaign in view of reducing the number of road casualties. Depending on the actual problem, its context, and the target audience, the decision will be to run a media campaign on its own or to combine it with other actions.

Before designing the campaign, you will need to gather background information on the problem. It will be necessary to collect data about possible contributing factors, the types of road users who are involved, and the context in which the problem occurs. You will then need to look for campaign partners and stakeholders who will be able to support your campaign and/or be part of the campaign team. To get started, you can follow the sub-steps outlined in Diagram 2.

Diagram 2 ■ *Sub-steps for getting started*

1.1	**Identifying and defining the problem**
1.2	**Analysing the context**
1.3	**Locating partners and stakeholders and getting them involved**
1.4	**Drafting the budget**
1.5	**Gathering campaign partners at a kick-off meeting**
1.6	**Calling for bids and setting up the campaign team**

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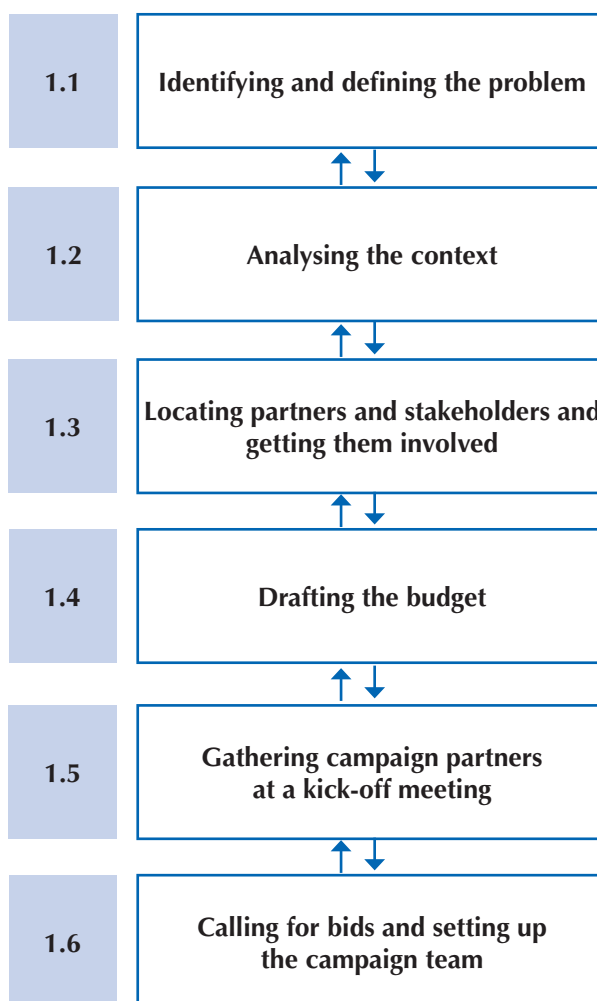
1.1 Identifying and defining the problem

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Generally, the road-safety problem is identified by the initiator of the campaign. The initiator is the person or organisation that decides to run the campaign. In most cases, the initiator coordinates and organises the campaign from A to Z, including supervision of the campaign team.

Identifying and defining the problem is a prerequisite for taking action. It is important to base the problem definition on objective data whenever possible. Ideally, the definition will be grounded on statistics that shed light on the magnitude and severity of the problem. These can be road-crash statistics (an expression of actual risk), data on traffic offences, measures of problem behaviour (observed or self-reported), and new phenomena or re-emerging problems that have received increased media attention.

At this point, it is important to obtain and catalogue all readily available data. For example, you should draw up an inventory of existing published research about the problem in order to be well informed on the issue [1]. Your review of the literature should include data on any campaign that has been done before. This step allows you not only avoid missing out on information, but also to make sure your work is based on the state of the art in the field.

Road crashes: statistics and databases

When collecting information about road crashes, it is advisable to rely on more than one database (e.g., police reports, hospital admission reports, official crash reports, insurance reports, road-safety indicators, traffic-engineering reports). This helps you get a more realistic picture of the problem, including its scope (local, regional, national), characteristics (type of road, type and severity of accidents, type of road users involved), changes over time (whether it is increasing or decreasing), and possible causes.

For crashes where there are no injuries but only property damage, the police are not automatically called to the scene of the accident; their presence on site depends on the extent of the damage. Therefore, it might be preferable to use accident statistics gathered by insurance companies. The same goes for crashes with vulnerable road users, since many crashes of this type fail to get reported to the police, even if there are injuries. In the latter case, hospital statistics can be especially useful to obtain a more correct picture of the problem. It is important to consult several databases, which should be as complete and reliable as possible.

The higher the quality of the data gathered, the more accurately the problem can be described, and the more appropriate the measures and programmes can be.

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1 For further information, visit the EU website that amply describes both past and future campaigns: http://ec.europa.eu/transport/roadsafety/publications/projectfiles/supreme_en.htm

Using different types of databases allows you to identify the most likely causes of road accidents according to the type of road users involved in the crash, the type of highway, etc.

The road-crash databases you use should (a) present sufficiently specific information, such as the time and place of each accident, as well as its severity, road users involved (type and number), and direct causes and consequences; (b) cover a long enough period of time; and (c) provide information at the local, regional, national, and even international levels.

Level of specificity

The databases consulted should contain specific information concerning the probable factors related to the problem.

–   Severity of accidents: knowing how serious accidents are makes it possible to classify them as fatal accidents, personal injury accidents, or property-damage-only accidents. A classification according to severity is an indicator of the importance and urgency of a given road-safety problem, and permits a better problem definition.
–   Type of road user(s) involved: this lets you know which types of road users are affected most by the problem.
–   Vehicles involved in the accident: information about the type and number of vehicles in an accident tells you whether or not the accident concerns a particular type of vehicle (bicycles, powered two-wheeled vehicles, cars, vans, etc.).

Databases should cover at least five years

It is important to analyse the accident statistics over a sufficiently long time frame in order to determine whether the accident rate remained stable, increased, or decreased. The time frame should be at least five years.

Local, regional, national, and international databases

The analysis of crash data will establish whether the problem is general or specific. Other regions may have developed best practices to tackle the problem effectively; these can provide valuable information.

Moreover, you can also compare the situation in your country with that of other countries. For instance, you can use annual international databases to compare accidents occurring in European countries and abroad (international comparison) (see Box 15). However, one must be careful in interpreting the data, because international databases do not always define their terms in the same way (road accidents, traffic laws, etc.).

Box 15 ■ International database examples

Several international databases on road safety can be used to obtain road accident statistics from around the world.
–   **The European Road Safety Observatory (ERSO)[18]** is an essential website for all European road-safety professionals. ERSO is the gateway into a central resource

of European road-safety data, knowledge, and links. It helps policymakers, researchers, and road-safety advisors to link up with the European road-safety world. The ERSO knowledge base, particularly the section on accident data, offers in-depth information about alcohol and driving, novice drivers, older drivers, cost-benefit analysis, post-impact care, road-safety management, road-safety ratings, speeding, speed enforcement, pedestrians and cyclists, vehicle safety, work-related road safety, and quantitative road-safety targets.

–   **RoadSafetyWeb**[234] is a website that gathers and centralises data from awareness-raising campaigns in the field of road safety. Its goal is to create a platform to promote various campaigns and facilitate information sharing via a forum for exchanging knowledge and experience about campaigns among participating organisations. Participants can use the campaigns in the database as a source of inspiration for new campaigns. RoadSafetyWeb centralises campaign data using a common structure and facilitates data searches and browsing.

–   **The CARE**[235] **database** (Community Road Accident Database) of the European Union's Directorate-General for Energy and Transport (DG-TREN) is a database on road accidents resulting in death or injury (no statistics on property damage – only accidents). CARE includes detailed data on individual accidents as collected by Europe's member states.

–   The **International Road Federation (IRF**)[236] is a non-governmental, non-profit organisation with the mission of encouraging and promoting development and maintenance of better, safer, and more sustainable roads and road networks. The IRF World Road Statistics is a global compilation of road and vehicle statistics from 1958 onwards, for more than 185 countries.

–   **The International Road Traffic and Accident Database (IRTAD)**[237] provides an aggregated database of about 500 data items from 30 countries, for which international accident, victim, and risk data are collected on a continuous basis.

–   Other specific databases containing data for specific road users or specific locations can be used: CHILD (children), ECBOS (coach and bus occupants), ETAC (truck accidents), MAIDS (motorcyclists), RISER (highways accidents), etc.

Road-crash statistics can also be included in a *road-safety barometer* system, which allows one to monitor the evolution of crashes on a regular basis (monthly, quarterly, etc.), along with other variables such as observed or self-reported behaviour, beliefs, and knowledge (see next paragraph).

Offences and behaviours (observed and self-reported)

Information on offences and road-user behaviours can be found in databases containing information from road-safety indicators or surveys. The road-safety barometer system used in several European countries compiles various types of data that are monitored at regular intervals, including risk-behaviour statistics (observed or self-reported), offence statistics provided by the police (number of tickets issued by the police, number of police reports), sanction statistics provided by the justice department (number of fines, other sanctions, vehicles confiscated). For example, to monitor driving under the influence, random roadside testing may be carried out, with drivers being stopped regularly at a fixed frequency (e.g., one driver out of five

for random breath testing). Data on speeding or seatbelt use may be garnered by looking at numbers of traffic citations or by observation.

To supplement collected statistics on observed behaviour, regular surveys can be used to obtain self-reported measures of knowledge, beliefs, and behaviours concerning various road risks (e.g., SARTRE – Social Attitude to Road Traffic Risk in Europe, long-term tracking studies, etc.).

Emerging issues: new legislation or media coverage

A road safety communication campaign may also be initiated on the occasion of a new traffic law being passed or an existing law being modified. Usually, this is based on a problem reflected in road-crash statistics (fines, rules concerning right-of-way, driving under the influence, use of in-vehicle technologies, etc.). Moreover, when a new problem appears, databases and road-safety barometers may provide information about newly observed behaviours and/or self-reported data related to the problem.

A problem given prominent coverage in the media can be used as a campaign theme even when it is difficult (or impossible) to measure the consequences of that behaviour in terms of road accidents. For example, there is ample clinical evidence for the negative effects of cannabis use on driving, but so far, very few statistics have been published on the number of road accidents caused by drivers under the influence of cannabis (the DRUID project will provide more information by 2010[1]). In some countries, a great deal of media attention has also been focused on the risks of fatigue while driving. Numerous reports have appeared in the media on the importance of taking rest breaks during long drives on a motorway. Up until a few years ago, the public and the media have not been highly aware of these issues.

A road safety communication campaign may also be used to educate the public, who might be misinformed on a particular topic, or completely unaware of it. Other starting points might be, for example, distraction caused by the use of mobile phones or a GPS.

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1   The objective of DRUID, Driving under the Influence of Drugs, Alcohol and Medicines, is "to give scientific support to the EU transport policy to reach the 2010 road safety target by establishing guidelines and measures to combat impaired driving".

1.2 Analysing the context

At this stage, you should get an overview of the broader organisational and economic context surrounding the problem. The context is an important element to take into account if you want to design a campaign that is relevant and effective. The context analysis will indicate if the campaign can or should be combined with other actions or programmes.

Organisational aspects

Organisational aspects are linked to the question "Who is responsible for road safety in the country?" (i.e., responsibility for roads and highways, traffic laws, campaigns, education, vehicle-related and technical aspects). A single organisation may be responsible for several facets, ranging from road infrastructures to awareness-raising and education.

In other cases, these responsibilities are shared by several organisations: the ministry of public works for roads, the ministry of the interior for police enforcement, the ministry of education for road-safety education programmes taught in schools, etc. For example, in France, the United Kingdom, Germany, and The Netherlands, there are separate, unrelated organisations to handle road-safety research, road-safety programmes, and road-safety administration. In other countries, these three domains are handled by a single governmental organisation. In general, governmental agencies are always responsible for road-safety policy, whereas awareness-raising and public education may be tasks shared by governmental entities and/or private charities or non-profit organisations.

Socio-economic context

The context in which the campaign and possible supportive activities are prepared has two levels: a general context, which can relate to the broader socio-economic, legal, and political situation, and a more specific societal context.

General aspects

Socio-economic, legal, and even political factors can have an influence on the driver and his/her behaviour, on the road and traffic environment, on the vehicle and its equipment, and thus on road safety. It is therefore necessary to look at these contexts in which a road-safety problem occurs.

General contextual aspects including legal issues, driver education, transportation and infrastructures, and geographic and economic factors, are presented here.

Legal issues
- Current traffic laws (what kind of behaviour is allowed or prohibited), e.g., legal alcohol limit, speed limits.
- Quality of traffic legislation (Are the rules clear and unequivocal?).

- Enforcement level of traffic laws (objective and subjective risk of getting caught when committing an offence), e.g., number of police controls for drinking and driving, speeding.
- Possible sanctions for offenders (Are the sanctions severe or not? Are they proportional to the danger caused by the offence?).
- Follow-up on traffic offences (What is the risk of appearing before court if the person refuses to pay the fine decided by the police? What is the real risk of being sanctioned?).
- Driver's license legislation (merit point system or conventional driver's license, price of obtaining a driver's license).

Driver education
- Level and quality of driver education.
- Driver improvement programmes.
- Probationary license and learner's permits for young drivers.
- Follow-up on risk groups (i.e., young drivers, elderly drivers).

Transportation and infrastructures in the country or region, including mass transit
- Quality of road infrastructures and equipment (roadside information, variable message signs, automatic tolls, etc.).
- Investments in improving the road environment.

Geographic and economic factors
- Factors that lead to high traffic volume (e.g., the presence of ports, airports, industry, etc.); these may influence the type and density of road traffic, which in turn will affect road safety.

Specific aspects

Once the general context is taken into account, a more specific context should be defined. Attention should be paid to the elements that could have an impact on the campaign. Four main types are listed below.

Communication context
Defining the communication context will require identifying the following aspects.
- The presence of:
  – Campaigns or actions that might conflict (for instance, car advertisements that focus on power and high speeds can have an impact on drivers' behaviour, mainly on speeding).
  – Other road-safety campaigns or programmes on the same theme that are planned to run at the same time but on another scale (for example, a non-profit organisation might be conducting a local campaign while a governmental agency is running a national road safety communication campaign; this might lead to conflicts in timing, profiling needs, etc.); even if the launch date of your campaign is not yet known, you will usually have a general idea about the timing.
- The existence of any other campaigns addressing the problem or similar problems that have been conducted recently (within the past five years). In this case, it might be useful to adopt the same theme, which is already familiar to the target audience (see *Some key elements for increasing the effectiveness of campaigns: learning from the past,* pp. 95-112).

■ The prominence of road-safety coverage in the media. It is important to know how much play is given to road safety in the media (Are there road accidents that had big media coverage?) and more specifically, what themes were treated and in what way (How did the media treat this subject?).

It is essential to know to what extent public awareness of the problem was generated by campaigns and/or by other factors. This can be learned from existing data or by conducting additional studies.

Events and seasonal topics

The time of the year when campaigns are carried out may be crucial, as these times may involve an increase in traffic or in partying and festive behaviours. For example, running a campaign around the time of special events such as Christmas, New Year's Eve, or the World Cup in football might be more effective because special events can generate greater involvement. However, some caution is needed here, since certain seasonal events may attract such huge media attention that the road-safety campaign gets lost in the shuffle.

Level of societal attention paid to road safety as a problem

The way in which road safety is treated within a society is also an important contextual factor, for example, whether or not road safety has become highly visible in the political debate. To illustrate this concept, we can cite the case of France in 2001, when road safety was declared a "major national cause" to fight for, and other cases like the European Road Safety Charter project initiated by the European Union in 2002 and the Road Safety Week of the United Nations.

Specific road-safety measures

Measures related to legislation (changes in traffic laws, fines, etc.), enforcement (increased enforcement, higher fines, etc.), infrastructures (roundabouts, speed bumps, etc.), and vehicle technology are all part of the context in which road safety problems occur. For instance, the introduction of new speed limits has proven effective in reducing the number of fatal crashes on the roads[238]. In some areas of the United States, raising the speed limit on motorways resulted in a 15% increase in the number of fatalities[239].

1.3 Locating partners and stakeholders and getting them involved

After defining the problem and its context, it is time to list all possible stakeholders who are connected with the issue and who could potentially be brought into the campaign as collaborators. As an initiator, you should therefore seek to contact any potential partners who have a direct or indirect interest in the campaign's objective.

Campaign **stakeholders** are those who have an interest in running the campaign and possible supportive activities. For example, road authorities have a commitment to reduce crashes, which is a principle of good governance; the police have an interest because guaranteeing public safety is one of their main tasks. In addition, there are insurance companies, who strive to reduce the financial risks associated with payments to traffic-accident victims. Other examples of stakeholders include road-user associations and special-interest groups (i.e., automobile associations, federations of cyclists, road victims' associations).

Campaign **partners** are those stakeholders who play an active role in the campaign; they include financial partners (sponsors) and organisations whose logistical support is needed to run the campaign. Examples of potential campaign partners are commercial advertisers (petrol brands, car manufacturers), trade associations (beverage industry, bar and restaurant owners), and private companies who wish to invest in public welfare (see Box 16).

Both stakeholders and partners can play a role in the choice of supportive activities or promotional actions, and/or participate in these activities.

Box 16 ■ Some examples of partners or stakeholders who might be involved in a road safety communication campaign

Many kinds of partners and stakeholders can be involved in a road safety communication campaign.
– When carrying out a road safety communication campaign on railroad crossings, the railroad management could be involved.
– In Canada, MADD (Mothers Against Drunk Driving), a road victims' advocacy organisation with chapters in Canada and the United States, is involved in road safety communication campaigns (e.g., the National Highway Traffic Safety Administration, an agency of the United States government, has a partnership with MADD).
– In Australia, an anti-speeding campaign was run in partnership with a football team to encourage student drivers to drive more slowly. Another action was conducted with a football team, which joined with a road-safety organisation in urging young drivers to get at least 120 hours of driving practice before going on to their probationary license.

Developing strategic partnerships is useful for[240]:
– Reducing duplication of effort.
– Sharing knowledge and expertise.
– Ensuring better allocation of resources.
– Getting social support and public involvement.
– Overcoming potential obstacles created by opposing parties.
– Getting synergistic effects and added value.

Who are the potential stakeholders and partners?

Public authorities

Public authorities in the areas of transportation (Ministry of Transport, road-manage-ment agencies), legal affairs (i.e., Ministry of Justice), or enforcement (i.e., national police board, local police) can operate at the national, regional, or local level. They can provide financing and/or logistical assistance in the campaign. Local campaigns are generally financed by local authorities without regional or national financial support (and likewise for the regional and national levels). However, regional or national authorities might provide campaign materials (e.g., posters) to local authorities, who in turn can conduct supportive activities in cooperation with the higher levels.

Unfortunately, public authorities are not necessarily willing to collaborate with some potential partners (such as non-governmental organisations, NGO) in every country. Although it is not impossible for an NGO to involve public authorities in a campaign, setting up such partnerships requires a great deal of motivation and effort[1]. A prerequisite is to see if the public authorities can assist at the national, regional, or local level.

Non-profit organisations and special-interest groups

Non-profit or special-interest groups can initiate campaigns (see Box 17) or link up to campaigns run by other organisations. Some of these organisations focus on specific themes or road-user groups. For instance, there may be road-safety organisations that work specifically on promoting pedestrian safety (e.g., International Federation of Pedestrians, European Association of Pedestrians), on reducing highway fatalities (e.g., Parents of Road Victims, European Federation of Road Victims), or on educating young children about road dangers. Non-profit associations or special-interest groups may be funded by commercial sponsors on a long-term basis and/or they may receive financial support from the government.

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1 e.g., for volunteer organisations working with and/or for young drivers it might be useful – in getting public authorities involved as stakeholders or partners in a campaign – to mention the European Road Safety Charter www.erscharter.eu and the Declaration of the World Youth Ambassadors for Road Safety www.who.int/roadsafety/en, both of which are a good means of influencing authorities.

Box 17 ■ *Illustration of a campaign initiated by a non-profit association: "European Night Without Accident" launched by Responsible Young Drivers (RYD) with the support of the European Commission (DG-TREN)*[241]

Responsible Young Drivers is a non-profit organisation whose mission is to promote road safety by urging young drivers to practice responsible driving. RYD's main goal is to stop fatalities among young drivers, not only during the weekends but also on weekdays.

European Night Without Accident is an awareness campaign that is conducted every year on a Saturday night in October, in as many nightclubs as possible. The goal is to get the road-safety message across. With the support of the European Commission, nightclub owners, and hundreds of volunteers, the European Night Without Accident has been running since 2003 in over 100 nightclubs all over Europe.

This night provides a unique opportunity for volunteers to interact with thousands of young people. In each nightclub, an RYD team welcomes drivers at the entrance and encourages them to take a responsible attitude behind the wheel. Each young driver is told about the dangers and risks on the road. Drivers who want to participate can make a sobriety pledge with the RYD team: they commit to staying sober all night so as to be able to drive back home safely.

Later in the evening, as the young reveller is leaving the club, an RYD volunteer suggests that he/she give proof of having kept the promise by taking a breathalyser test. Those young people who did indeed follow through are then rewarded with gifts from the campaign partners and sponsors. Those who did not are encouraged by the RYD team to leave their car in the parking lot or entrust the drive home to a friend who is sober.

Businesses and trade associations

Businesses (banks, insurance companies, vehicle manufacturers, vehicle equipment manufacturers, safety equipment manufacturers, transportation companies, private motorway companies, etc.) as well as trade associations and unions may be willing to provide funds or to actually participate in running or evaluating the campaign.

They can also give practical assistance as campaign facilitators or mediators. In this role, they will deliver the campaign messages and information to the target audience by functioning as a communication channel, e.g., via their website and/ or publicity network. For instance, an insurance company serving as a campaign sponsor could disseminate the campaign message and materials via its network of insurance agents.

Private organisations might be chosen either because of their close association with the target audience (e.g., youth organisations could target young drivers; car dealers could target drivers in general; cycling organisations could target cyclists,

etc.), or because they can provide logistical support or have a personal or corporate commitment.

Researchers

Researchers, whether independent or part of a research body (university department, research agency, etc.), can be brought into the campaign when the campaign theme is related to one of their specific research topics. In this case, researchers can provide the campaign initiator with valuable input. Moreover, they can be in charge of the evaluation (design, implementation, etc.) as stakeholders, or merely as participants in the actual evaluation process.

Getting stakeholders involved as partners in the campaign

As a campaign initiator, you should be aware of the importance of public-relations networks that can reinforce your campaign. It is recommended that you do a survey of the relationships with identified stakeholders and that you create and maintain good relationships, especially with organisations that are potential allies *(see Box 18)*. Some stakeholders have an obvious interest in participating in a campaign (e.g., non-profit road-safety organisations); for others, the reasons for participating may be less obvious. In all cases, involving stakeholders as partners is time-consuming.

Box 18 ■ List of possible partners

> Many kinds of partners can be involved in road safety campaigns and/or supportive activities:
> - Police
> - Schools
> - Festival and event organisers
> - Volunteer networks (e.g., La Prévention Routière, Veilig Verkeer Nederland, Deutsche Verkehrswacht, Royal Society for the Prevention of Accidents)
> - Road-safety organisations
> - Organisations that can provide logistical support such as lending special equipment for public-awareness events (driving simulators, equipment for testing reaction times, etc.)
> - Professional organisations (e.g., insurance industry associations, trade associations for the auto-repair industry, express delivery companies, corporate fleet managers)
> - Activist groups (e.g., for cyclists, motorcyclists, truck drivers)
> - Alcohol-beverage makers (for a drinking-and-driving campaign)
> - Associations of restaurant owners, nightclub owners, etc.
> - Doctors, other medical personnel, and hospitals
> - Health services and clinics
> - Supermarkets and retail stores (e.g., bike shops, car-accessory stores)
> - The telecommunications industry (e.g., mobile phone makers, telecommunications providers)
> - Service stations, petrol companies, etc.
> - Automakers, manufacturers of safety equipment, etc.
> - Researchers, academics, universities, etc.

Certain potential partners may be perceived as being incompatible with the campaign, for example, beer producers for a drinking-and-driving campaign. In reality, this might not be the case, and they might, on the contrary, be able to make an important contribution (see Box 19). It is important to keep an open mind and to see such organisations as potential allies rather than adversaries.

Box 19 ■ Involving perceived opponent organisations as campaign partners

It can be useful to involve organisations that might seem opposed to the campaign theme.

In relation to speeding, some automakers work on speed limiters or cruise controls, which they may include in their marketing policy (safety is an important selling point). Consequently, they are potential allies in road safety communication campaigns, although some road safety "hardliners" may be sceptical about involving automakers. This illustrates how possible opponents might get involved in a campaign.

For a drinking-and-driving campaign, involving the beverage industry has possibilities. At first, this idea may appear far-fetched, because being involved in what is essentially an anti-alcohol campaign would seem to go against the industry's interests. However, many people in the beverage industry see this differently, since promoting responsible use of their products can have a positive impact on their corporate image (and consequently on their sales).

1.4   Drafting the budget

The budget is a highly critical element. Of course, it has a direct impact on all aspects of the campaign.

Type of budget

Most of the time, the total budget allocated to campaigns (including the evaluation) is fixed annually and is therefore not very flexible.

If the campaign initiator is a public authority, the annual budget may be negotiated in the political arena and may be part of the government's total budget for road-safety initiatives, based on the government's agenda in this area. If the initiator is a private organisation, the annual budget may be negotiated with the board of directors and be based on the organisation's strategic goals.

There are exceptions, however. Some organisations define and negotiate the budget for each campaign separately, although such flexibility is rare.

If the campaign is conducted by a non-governmental organisation, chances are that the total budget will be rather limited, since NGOs do not generally benefit from a high level of funding.

Ways to increase funds for your campaign include lobbying for government funding (including, for example, proceeds from the national lottery), ensuring that you have an advocate at budget-planning meetings, organising fundraising actions (e.g., benefit events), and applying for private sponsorship.

Incorporating the cost of research and evaluation

When calculating the campaign budget, the cost of research – which of course includes evaluation – must be figured into the total. Indeed, research activities should not be made to suffer for the sake of saving money. Although the cost of research may seem high, it is an essential part of all campaign processes, including gaining a deeper understanding of the problem behaviour and the target audience(s).

A well-planned and well-executed campaign pays for itself, not only because it has a better chance of success, but also because the lessons learned from it will help improve the effectiveness and cost-efficiency of future campaigns. At the onset, stakeholders, partners and private non-profit organisations may be more interested in financing the actual campaign rather than research. However, they might increase their interest in raising money for research if they realised that the campaign results may not only give them good publicity but also provide them with more detailed information about money spent on the project. Using this argument, it may be easier to convince them to finance some or all of the research.

If the necessary experience and means are invested in the campaign and its evaluation, standard procedures regarding the type of data to be collected can be established (i.e., self-reported data, observed data, and/or road crash data). The evaluation procedures developed in the CAST project can be used as a basis for this[242]. When partners meet for the first time, they may already know whether control or comparison group(s) will be used [1], and on which dimension the evaluation will be based (e.g., observed or self-reported behaviour depending on the theme). Consequently, they will already have an idea of the evaluation cost. For example, to determine the budget to be allotted for the evaluation, the department in charge of managing the evaluation can rely on its own experience and past evaluations in other regions or countries. In Europe, when a quasi-experimental design with control or comparison group(s) is used, including before and after measurements, the percentage of the budget devoted to evaluation ranges between 5% and 20% of the total campaign budget.

However, in cases where the budget is so limited that there is very little left for research and evaluation, it will be necessary to make compromises (e.g., between the number and type of variables, the size of the sample, and the cost) while still maintaining an evaluation design that will allow for clear conclusions.

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1 It is advisable to have at least one before and one after measurement with control or comparison group(s).

1.5   Gathering campaign partners at a kick-off meeting

All partners involved in the campaign should meet, at the initiator's request, to talk about the campaign. During this meeting, the assignment of tasks should be discussed. For example, tasks such as designing, implementing, and evaluating the campaign (message design, production of materials, evaluation stages) can be performed either by in-house departments or outside agencies. When the initiator decides to work with outside agencies, these agencies can be present at the meeting if they have already been contracted [1].

After this meeting, the campaign initiator will prepare the first draft of the communication brief.

Defining the essentials of the campaign and discussing the strategy

The essentials of the campaign will be discussed during the kick-off meeting: What is the problem? Who is targeted? What type of campaign might be needed to reach this target audience? Then some preliminary ideas about the general strategy for achieving the goal can be brought up.

In doing so, it's imperative to consider each step of the campaign process: doing preliminary research (in-depth situation analysis), defining the campaign concept, designing the campaign including its messages, choosing the media that will be used in the campaign, producing the campaign materials, launching the campaign with an announcement to the press, implementing the campaign and the evaluation, and producing the final report.

Depending on the nature of these tasks, it is important to know:
– What skills are necessary.
– Whether the initiator or one of the partners has the know-how needed to perform these tasks, or if an outside agency should be contracted.
For example, the campaign material might be produced internally or externally. Depending on the type of campaign and the media used, this may involve photography, graphic design, illustration, layout, printing, recording and production of audiovisual materials, digital media production (websites, internet advertisements, etc.), manufacture of campaign giveaways, etc.

Another important issue concerns the campaign evaluation. To produce an unbiased evaluation and draw clear conclusions, the evaluator should be independent, impartial, competent, and reliable. The choice of evaluator will mostly be a pragmatic one. In some cases, it may be more practical to work with a combination of in-house and outside evaluators, depending on the type of evaluation needed:
– Internal evaluators can be staff members who are experienced with the required type of evaluation.

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1   This can happen if they are hired for several years on a fixed-contract basis (see *Advertising agencies*, p. 197).

– External evaluators or auditors can be consultants or specialized companies that are commissioned to perform the evaluation.

The evaluation itself should be closely monitored by an evaluation committee (regarding quality control, see *Evaluating campaigns*, pp. 150-168, *and Conducting the before-period evaluation and implementing the campaign*, pp. 265-278). This committee may be composed of the campaign initiator, campaign partners, researchers, and other stakeholders.

Creative brief

After the kick-off meeting, the first creative brief or communication brief will be produced. The creative brief is developed by the campaign initiator in collaboration with campaign partners. It must be updated by the campaign initiator at each step of the campaign, and also whenever any new and important information comes up. The creative brief can be considered as the logbook of the campaign, laying out the guiding principles for designing the campaign and its evaluation. The more detailed it is, the better the campaign will be able to reach its objectives.

At this point in the development phase of the campaign, the information provided in the creative brief will be based on existing knowledge about the campaign theme and target audience (from statistics, road-safety barometer systems, etc.). Moreover, if past campaigns have taken place on this theme and for this target audience, information from them can also be used as input (see Box 20).

Box 20. ■ Creative brief for a campaign on speeding

- **Problem description:** statistics on accidents due to speeding, data on speeding offences and behaviour (observed and self-reported), types of roads where speeding problems are most often seen, types of road users involved, etc.
- **Context of the problem:** speed management and enforcement system, speed limits, fines for speeding, enforcement level, previous measures to counter the problem, possible societal trends that encourage speeding
- **Target audience(s)**: audience(s) most involved in the problem behaviour, for example, male drivers ages 20-25
- **General goal of the campaign:** to reduce speeding-related accidents by influencing speeding behaviour of target audiences
- **Campaign stakeholders and partners:** national and local police forces, road victims' associations, local governments, insurance companies (sponsor), etc.
- **Possible media and distribution channels:** network of road billboards, network of insurance brokers, etc.
- **Total available budget** including the budget for evaluation
- **General time frame for the campaign:** for example, October-November

In any case, the initial creative brief will be a general overview of the situation, in relation to the population most involved in the problem. Additional elements needed for developing the campaign strategy will be investigated during the situation analysis.

1.6 Calling for bids and setting up the campaign team

After having determined what know-how is needed and is available, it is time to assemble the campaign team. Typically, the campaign team will consist of people from the initiator's organisation, the campaign partners, and any third parties that will be hired as subcontractors. If you do not have the appropriate knowledge and facilities in-house, you should not hesitate to consult and/or hire a professional or an expert. Such a solution often saves time and improves the quality of the final product. Thus, part of the work involved in the design, production, and implementation phases can be subcontracted to specialized companies such as communication and advertising agencies, printers, etc. However, it is important to stress that all work should remain under the supervision and responsibility of the campaign initiator. If your budget does not actually allow you to hire outside vendors, you may choose to perform all tasks internally. However, you should be aware that this might cost more in the long run, since having experts permanently on staff is not always cost-effective.

For hiring outside agencies, you should put out a call for bids or a request for proposals (RFP). The creative brief should be attached to the call for bids.

The choice of vendors is made according to the following selection criteria:
–   The first criterion concerns general competencies, such as background in the field of social marketing and/or safety campaigns (e.g., road safety or public-awareness campaigns, specific target groups).
–   The second criterion concerns more specific skills related to the particular task to be performed, such as expertise in statistical analysis, experimental design, and theoretical models explaining behaviour.
These competencies should be mentioned in the call for bids or RFP (see Box 21).

Box 21 ■ Stages of the bidding process

The bidding process should involve at least the following stages:
1   Preparing a short list of possible vendors.
2   Defining, drawing up, and issuing a request for proposals, including available budget and deadlines.
3   Defining specific competencies to be used as selection criteria.
4   Evaluating the bid documents according to the cost/quality trade-off.
5   Discussing bids with candidates (experienced people are needed for proper negotiation).
6   Making the right choice and drawing up the contract agreement.

Advertising agencies

Generally, the initiator works with one or more agencies to design the campaign. Some agencies are hired to work on a single campaign; others are hired for several years to work on various campaigns with different themes or geographic scales or to participate in an entire campaign programme. For instance, some countries have multi-part campaign programmes with a number of recurrent themes (e.g., driving under the influence, speeding, use of safety equipment) that are addressed every year for 4 or 5 years.

In this last case, the length of time covered by the contract with the advertising agency may correspond to the length of the programme, so it may encompass more than one campaign or more than one year. Insofar as the advertising agency will be contracted for a longer period, making the right choice is important. It is one of the keys to success.

The advertising agency (see Box 22) usually takes care of campaign logistics and also plays a consulting role. However, the possible roles of the advertising agency depend on its background and can vary quite a bit from one agency to the next. The agency should preferably have a good strategic marketing background that goes beyond just being able to design an attractive campaign.

With some advertising agencies, the risk is that they focus mainly on creative aspects and lose sight of strategic thinking. If possible, you should hire an agency that specialises in public-service/social-marketing campaigns.

Box 22 ■ The advertising agency team

The advertising agency provides a multi-disciplinary team managed by the "creative director" or "art director" in collaboration with the account manager or project manager.

The team typically consists of:
- A project manager
- A strategic planner or consultant
- A creative team
- A media-planning team
- Multimedia producers and directors

However, the media-planning team is not always an in-house department of the advertising agency. Campaign designers often work with a media-buying agency that puts together the media plan.

To increase the chances for campaign success, the advertising agency must base its work on the objective data presented in the creative brief. This is the essential link between the initiator and the agency throughout the entire campaign-development process. For practical reasons, it may be possible to work from a concise version of the creative brief.

Production agencies and vendors

Production agencies and vendors are mostly dedicated to producing campaign materials for specific media. They include:
– Web design agencies for websites, banner advertisements, and viral marketing via the Internet.
– Printers for leaflets, brochures, and billboard advertisements.
– Audiovisual production agencies for TV and radio spots.
– Other production vendors for giveaways and gifts (T-shirts, key rings, stickers, etc.).

There are two possible ways of handling production of campaign materials:
– Either the initiator him/herself will hire the outside agency to produce the material.
– Or the advertising agency will subcontract the production of the material out to a production house. In this case, the advertising agency will coordinate production and act as the liaison to the initiator.

Media-buying agencies

These agencies specialize in buying time or space for the delivery of advertising messages in mainstream media (radio, TV, newspapers, etc.). Some media-buying agencies also offer media-planning services based on extensive media research. Media planning can be done internally, but in most cases, both media planning and buying are subcontracted to a media-buying agency, either by the initiator or by the advertising agency.

Public-relations agencies

The announcement of the campaign to the press (also called the launching of the campaign) can be handled internally or subcontracted to a vendor, usually a public-relations agency (PR agency). PR agencies can also be consulted to help increase the volume of free publicity (free coverage in the press) for the campaign, using PR-industry techniques.

Researchers

Researchers from institutes or universities can be hired to perform all or part of the preliminary research for the campaign and its evaluation. The participation of outside researchers may or may not be needed, depending on whether an in-house research department is available at the initiator's organisation. When the campaign organisation has its own evaluation specialists, their role may consist of making sure the evaluation is designed and carried out exactly as planned. However, because maintaining objectivity during evaluation is essential for drawing valid conclusions, we recommend you use external resources to evaluate the campaign – this is your guarantee of impartiality. Often, researchers design the evaluation while the actual field observations and/or administration of questionnaires can be subcontracted to a survey firm or pollster.

In collaboration with the campaign initiator, the selected researchers will design and implement the entire evaluation process. They will design the evaluation according to the specific objectives of the campaign, choose the evaluation method(s) and

data-collection technique(s), define the sample, design and pre-test the tool(s) for collecting data, carry out the implementation of the evaluation, process the data, interpret the results, and write a report.

To conclude on setting up the campaign team, all or some of the tasks involved in creating the campaign and its evaluation may be subcontracted to one or more outside agencies whenever these tasks cannot be performed in-house. For example:
–   The design and creative concept for the campaign may be subcontracted to an advertising agency.
–   The production of the campaign materials may be subcontracted to a production vendor.
–   The launching of the campaign with an announcement to the press may be subcontracted to a PR agency.
–   The design and implementation of the campaign evaluation may be subcontracted to an outside researcher or research organisation.

Although subcontracting specialized agencies can be cost-effective, certain organisations simply do not have the budget to hire outside vendors such as advertising agencies or media-buying agencies; they must therefore use in-house resources to perform these tasks.

Once the requests for proposals have been issued and the successful bidders have been chosen (see *Stages of bidding process*, Box 21, p. 196), the team is nearly complete, although additional resources may sometimes be needed at a later stage.

The campaign initiator coordinates, leads, and manages partners and subcontractors. Each organisation interacts with the others and must understand the others' points of view in order to improve the campaign – each one must be able to put him/herself in the place of the others (see Figure 30). Moreover, if differing points of view or conflicts arise, it is up to the campaign initiator to resolve them and ensure effective work relationships between partners, stakeholders, and outside agencies.

Figure 30 ■ *Interaction between different members of the campaign team*
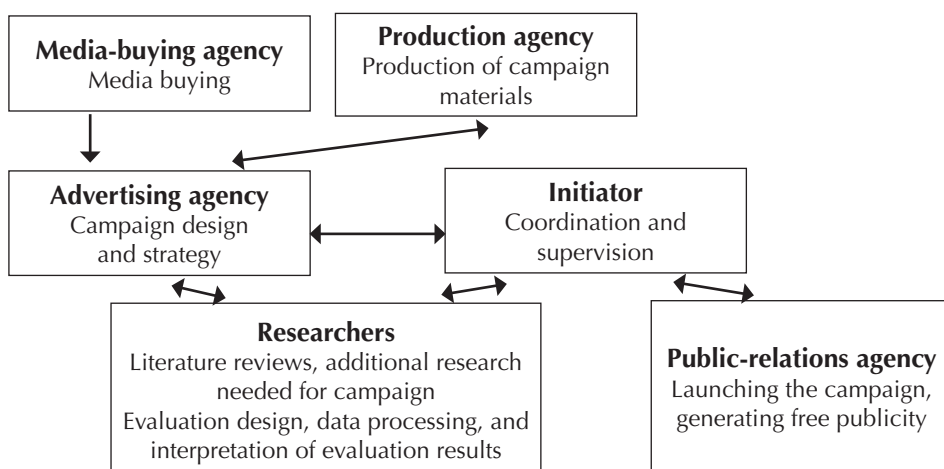
Concluding recommendations

To get started, you should take the following steps:

Identifying and defining the problem

In order to identify the problem, you should rely on data concerning accidents, offences, observed behaviours, and current issues.

Analysing the context

An analysis of the general and specific contexts will indicate if the campaign can or should be combined with other actions or programmes.

Locating partners and stakeholders and getting them involved

These can be public authorities and/or private organisations. Their participation in the campaign may be financial, logistical, or otherwise.

Drafting the budget

You should define the potential or actual budget of the campaign, including the cost of research and evaluation.

Gathering the campaign partners at a kick-off meeting

At this first meeting, you should define the general objective of the campaign, as well as discuss the campaign strategy in order to know what your needs are. Based on these needs, you should get together with the campaign partners to identify the resources you already have and the ones you will have to find elsewhere. You should draft the first version of the creative brief; this will be updated throughout the campaign process.

Calling for bids and setting up the campaign team

The campaign team should include people from the initiator's organisation, the campaign partners, and any outside agencies and vendors hired following a call for bids. The bidders may include advertising, production, and media-buying agencies, public-relations agencies, and researchers. The same advertising agency might be subcontracted for several years or several campaigns. Even though it is an expensive option, having the evaluation done by an outside party is the best solution, provided independence is respected.

Analysing the Situation

Once you have identified the problem and partners for your campaign, you can start to analyse the situation in greater detail. At this stage, you should conduct an in-depth analysis of the problem, its possible solutions, and the target audience. This will enable you to define the specific objectives of the campaign, design the message, and prepare the campaign evaluation.

The situation analysis consists of the sub-steps shown below (see Diagram 3).

Diagram 3 ■ *Sub-steps of the situation analysis*

2.1	**Thoroughly analysing the problem and possible solutions**
2.2	**Deciding whether to segment the audience**
2.3	**Determining how to act on main motivations and reach the audience**
2.4	**Defining the campaign's specific objectives**
2.5	**Gathering information from evaluations of past campaigns and other actions or programmes**
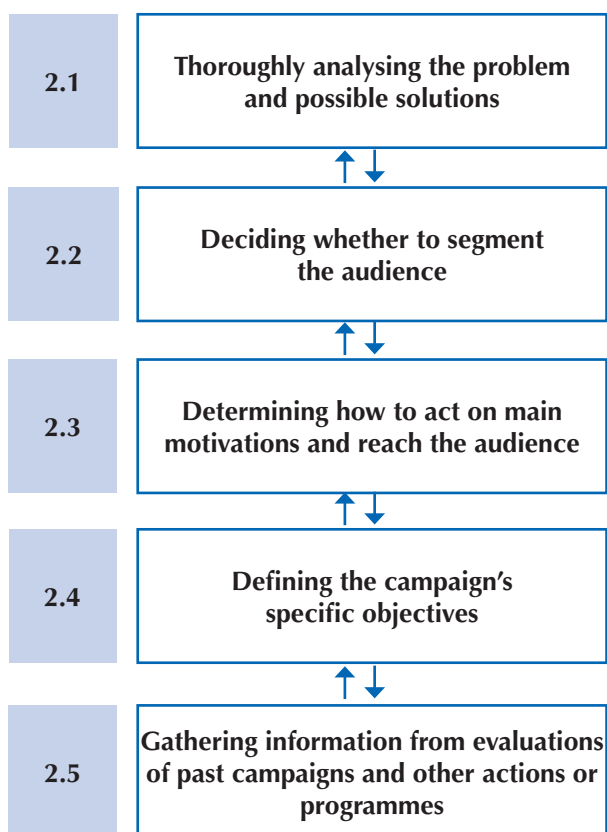
2.1 Thoroughly analysing the problem and possible solutions

Look for existing information

Now that you have identified the problem, it is time to examine the situation in some depth in order to get more precise information about the origins of the problem and its possible solutions. This is done by looking for available data and synthesising them. The data can be obtained from four sources:

a   Qualitative and quantitative studies on the problem behaviour.
b   Research proposing theoretical models that explain the motivational factors underlying this behaviour.
c   Past campaigns and other actions with thorough evaluations of outcomes (i.e., of the measures that were taken to solve the problem).
d   Marketing studies on the target audience(s).

For this purpose, you should search for databases using relevant keywords in order to obtain exhaustive bibliographical references on the theme under consideration. This work may be done by researchers. Although such an in-depth analysis may seem like a lot of work and investment for a single campaign, it will provide you with invaluable information that can be used as the basis for a long-term strategy. For instance, with the ageing of the population, questions concerning elderly people's mobility and fitness to drive are arising more and more often. The necessary research should be performed at the outset in order to have solutions available in the near future that can also be integrated into a long-term programme.

Qualitative and quantitative studies

As a complement to data on road crashes, offences, and road-user behaviour gathered in the first step, it is advisable to do a literature review of all available data on the problem behaviour. This will allow you to analyse the behaviour in depth, understand it better, and know more about its origins. Researchers can do this type of literature review.

It is particularly relevant to look for conclusions from qualitative and quantitative research on the problem behaviour, including studies based on observed and self-reported behaviours, beliefs, and knowledge. Such studies will enable you to learn more about the frequency and causes of the problem.

In order to conduct a more detailed analysis, the following questions need to be answered: *who* (characteristics of road users involved in the problem), *where* (place where the problem most often occurs), *when* (times when the problem occurs), *how often* (frequency of the problem), and *why* (contributing factors).

Who?

This question concerns the type of road users involved in the problem and their characteristics (e.g., mode of transportation, age, gender, socio-cultural level, educa-

2 Analysing the Situation

tion, occupation, driver's license, years of driving experience, number of kilometres driven per year). This will let you know whether or not the identified problem concerns a specific group of road users, which in turn will allow you to determine if the campaign should address a large general audience or a narrower one.

Where?

This question concerns the driving situation and area in which the problem occurs (e.g., intersections, straight roads, city, motorways, curves, or other difficult situations). Such information helps to define the scale and place of the campaign (e.g., national, regional, and/or local scale, concentrated in urban areas or on highways).

When?

Databases that specify when road accidents occur allow you to follow the change in crash statistics day by day. It is strategically relevant to get accurate indications on exactly when the accidents happened – including time of the day or night, day of the week (weekends vs. during the week), and time of the year (e.g., most road crashes occur in peak traffic).

How often?

Another consideration is the frequency of the problem (e.g., the problem of not wearing a seatbelt can occur routinely, intermittently, or rarely for a given road user).

Why?

Crash and offence data provided by the police can help you identify of some road crash causes. For example, causes can be uncovered by breath or blood tests for alcohol-related accidents, observations and technical tests for seatbelt wearing by drivers and passengers, tire tracks on the pavement combined with other indications for speeding, etc. Moreover, data from surveys and observations may provide additional information on underlying road-crash factors, for example:

–   Road-user characteristics, whether temporary or more stable (e.g., age, fitness to drive, distraction, fatigue, driving experience, sensation-seeking, aggression).

–   Road-user behaviour, whether intentional or unintentional (errors, violations) or linked to driving or riding behaviour (e.g., speeding, use of seatbelts).

–   Vehicle-related factors (e.g., worn tires, mechanical defects).

–   Environmental factors: weather conditions (e.g., rain, fog, ice), road conditions (e.g., potholes), road-engineering factors (e.g., road layout, traffic signals), etc.

Factors that are related to road-user behaviour are of course the most important as far as campaigns are concerned. If the problem has more to do with technical or environmental factors, it might be necessary to look for other ways to deal with the problem (see *Road safety and human behaviour,* pp. 29-80).

Research proposing theoretical models

Research on behaviour enables you to explain what motivates the road user to adopt the problem behaviour so that you can attempt to influence those motivations in a subsequent step. This task can be done by a researcher.

To investigate the motivations underlying the unsafe and safe behaviours you are interested in, you can do the following:

–   Conduct a literature review on the problem behaviour, looking for theoretical models that predict and explain the behaviour in the target audience. Information sources to search for include articles published in scientific journals, conference proceedings, chapters of books, and published or unpublished reports.

–   Identify the main predictors of the behaviour or behavioural change, that is to say, the factors that determine it.

–   Among the main predictors, make sure the constructs have been measured at the same level of compatibility (i.e., general or specific level). For example, if you examine predictors on speeding in towns among young drivers, the measures concerning beliefs, norms, and behaviour should apply to the same situation and the same road-user group.

–   Check to see if the main predictors that you have identified concern the target audience(s) you are dealing with, and how recent the findings are.

If you are unable to find any information concerning the problem behaviour in question, then you should look for research that predicts and explains a closely related behaviour. The conclusions of this research may shed some light on the problem and its causes.

Past campaigns and other actions

It is important to gather information from past campaigns and other actions conducted on the same theme or on the same target audience within the last 20 years[1]. This step can be performed by researchers. It will allow you to build on solutions that have already been used, adapt a past campaign conducted in another area (city, region, country), take advantage of good programmes, learn from past mistakes, and so on.

To conduct a literature review, it is necessary to list all campaigns and other interventions at the national and/or international levels that have been carried out on the theme and/or target audience(s), and to select information relevant to your own campaign (e.g., evaluation results, advantages and limitations of a given theoretical framework, etc.). International databases (see Box 15, pp. 181-182) and meta-analyses (see pp. 98-109) can be a good starting point for this review.

If you cannot find campaigns or other actions on the theme or target audience within the recommended 20 years, then you might consider either lengthening the time period or looking for information that concerns a closely related behaviour.

Marketing studies on the target audience

Marketing research will offer you a better understanding of the target audience(s). For example, it may include general studies on the audience's lifestyle, travel behaviour, or leisure activities. It may also include studies focused on the problem behaviour and its explanatory factors, and possibly on stages of behavioural change,

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1   For further information, visit the EU website that amply describes both past and future campaigns: http://ec.europa.eu/transport/roadsafety/publications/projectfiles/supreme_en.htm

perhaps based on a theoretical model, e.g., the *Transtheoretical Model of Change*[124] (see pp. 74-75).

Long-term tracking studies often provide this kind of information. These studies are monthly or weekly polls on a representative sample of the general population or a selected part it. The questions are almost identical from one phase to another, so they offer information on the targets, their motivations, characteristics, and behaviours and how they evolve over time. For example, if you want to carry out a drinking-and-driving campaign aimed at 18-24 year-old drivers, you might look for information on their habits, not necessarily only those related to driving but also their usual leisure activities, whether they go out alone or with friends, at what time they go out and come back home, and their drinking habits, etc. Long-term tracking studies will usually be conducted by road-safety researchers. Advertising agencies or marketing-research agencies will be able to provide more general studies on the target audience.

Synthesis of available data

At this stage, you should synthesise all available data on the problem behaviour and attempted solutions that you gathered from the four sources mentioned above.

Synthesising is a complex and somewhat creative task. You may find contradictory information, or quantitative and qualitative data that are not easily compared. Moreover, scientific data and practical experiences may not overlap. Therefore, this task should be performed by a multidisciplinary team consisting of researchers, marketing specialists, and practitioners.

In summing up what you have learned from the available data, you should give a detailed description of the problem you are seeking to modify and/or the safe behaviour you are hoping to initiate. You can put together a table to outline the areas covered, i.e., the elements that you have been able to gather from the four sources of information (see Table 17).

Table 17 ■ *Elements gathered from the previous studies*

Data source	Goal of research	Questions to be answered
Qualitative and quantitative studies (databases, statistics, observations, and surveys)	Analyse the problem behaviour in depth	■ *Which behaviour causes road accidents or constitutes a problem?* ■ *Is the behaviour intentional or unintentional?*
Research on theoretical models	Explain the motivations underlying behaviour	■ *What are the main predictors and main motivations underlying the problem behaviour (and if possible, the safe behaviour)?*
Past campaigns and other actions	Benefit from experience of past initiatives	■ *How can you use elements from other successful road safety campaigns as a basis for your campaign?* ■ *How were the campaigns evaluated?*
Marketing studies on the target audience(s)	Define the target audience	■ *What are the target audience's characteristics?* ■ *How can the target audience be reached and influenced?* ■ *At which stage is the behaviour currently situated?*

At this point, it is very likely that not all the necessary data is available. For this reason, it is important to identify what information is still missing in order to determine what research should be conducted in the next two sub-steps:

■ In the first sub-step (see *Deciding whether to segment the audience*, pp. 207-208) you will need to know whether you must segment the audience, and if so, according to what variables. If there is not enough available information for segmenting the audience (e.g., if some information on the behaviour is missing), you should conduct additional studies.

■ In the second sub-step (see *Determining how to act on main motivations and reach the audience*, pp. 209-213), it is often necessary to do some research on the target audience just defined in order to know how to reach and influence it, i.e., on which factor(s) to act (main motivations).

2.2 Deciding whether to segment the audience

The synthesis of available data from the four sources helped you to determine who will be your target audience. Now you'll need to see if segmentation techniques can help you define it further. To decide whether you need to segment the audience, you should examine the theme of the campaign and the details of the audience (social profile, lifestyle, media habits, etc.). Sometimes, the objective of the campaign is to inform drivers about a new law concerning all road users; in this case you should target the whole population. Most often, though, the problem concerns a more specific group of road users. If this is the case and if the group is heterogeneous, segmentation will help you to reach it more easily and thus increase your campaign's chances of success.

To segment the audience, it is necessary to rely on the information collected from the four sources used earlier to analyse the problem, and also on additional research if you judge that the available information is not sufficient to segment the audience (see Table 17). For instance, you may need to gain better knowledge of:
– The target audience's lifestyle and other characteristics (cultural, demographic, geographic, and socio-economic aspects).
– The stage of change[124] at which the target audience and/or its segments are situated.

Once you have defined the different segments, you will evaluate and select one or more of them. This process will allow you to reach the audience as effectively as possible by adapting your communication strategies to each segment, according to its specific characteristics.

As opposed to the mass-marketing approach, which treats target audiences as large aggregates and focuses on common needs instead of differences, the segmentation approach treats target audiences as consisting of subgroups each with different needs, and focuses on one or more of these subgroups (see Box 23). Target segmentation should be carried out by specialists at the advertising agency.

Box 23 ■ In-depth analysis of the target's lifestyle and characteristics, aimed at segmenting the target audience in a campaign directed at teenage pedestrians[243]

In a British mass-media campaign targeting teenage pedestrians in 2005, the target group was identified through road-crash statistics.

Road-accident statistics in 2004 revealed that fatalities and injuries among teenage pedestrians were a major problem in Great Britain for teenagers between 11 and 16 years of age. The statistics also revealed that most of the road accidents occurred between 3 p.m. and 8 p.m., with road crashes peaking after school during the week, and on routes teens take most often. Information on when these road accidents occurred was important for the development of the message content.

In order to improve communications with teenagers and to develop strategic statements and key messages, campaign officials agreed they needed more information about the following topics:

- Why these road crashes occur
- Teenagers' attitudes towards road safety and risk taking
- How gender, age, attitudes, and lifestyle affect their road-safety behaviour
- The roles peers play in their road-safety behaviour
- Teenage interaction and friendship
- Why they take risks on the roads (and engage in conscious or unconscious risk-taking)
- How they might address the fact that other distractions (e.g., sex, exams, drugs, alcohol) take priority and push road safety lower on the agenda
- The most appropriate tone to use when talking about road safety
- How to make teenagers reconsider their behaviour related to road safety
- Teenagers' feelings about advertising in general

To acquire this knowledge, campaign officials collected existing studies on these topics and commissioned new, strategic/qualitative research (focus groups) and quantitative research on each topic. They then segmented the target audience and used the research to develop communication strategies and key messages.

2.3 Determining how to act on main motivations and reach the audience

Which motivations to focus on

The first question is whether the behaviour is intentional or unintentional. Next, it is important to understand the motives behind the action.

Knowing whether the behaviour is intentional or unintentional

First of all, you need to know whether the behaviour is intentional or unintentional. Perhaps you have already obtained this information from the literature review. If not, you will have to conduct a survey to find out, in which case the Driver Behaviour Questionnaire (DBQ) could be used. This questionnaire is based on Reason's (1990) classification of human factors (see *Unsafe acts: unintended and intended*, pp. 44-46)[244].

For instance, concerning headrests in vehicles, you have to take into account the possibility that people are simply not aware of the risks related to not securely adjusting the headrest, and therefore do not perform the safe behaviour. If adjusting the headrest is the campaign issue, then a necessary step in determining whether the behaviour is intentional or not is to ask people how often they adjust their headrest and if they know that not adjusting it is risky.

Defining the motivational factor(s)

In many cases, the literature review will provide some information on the main predictors of the problem behaviour (or behavioural change). However, it might be necessary to conduct further research to update this information or better relate it to the target audience. In this case, you must look into the motivational factors that underlie the problem behaviour. You can do this by means of a questionnaire (see Box 24) that you will need to draw up and administer to a sample of the target audience.

To build such a questionnaire, it is recommended that you rely on a theoretical model. Depending on what information you have already found in the literature, there are three possibilities:
– You have a lot of information on the main predictors, in which case you can start building the questionnaire right away.
– You have some information on the main predictors, but you know that certain elements are missing; in this case, you need to do additional research before devising the questionnaire.
– You have no information at all; here, you should first select a theoretical model and then do a pilot study to determine the most frequently occurring factors that influence the concerned behaviour.

Below is a brief description of the steps to follow in each of these three cases.

■ **You have a lot of information on the main predictors, based on the literature review, but you want to know which one carries the most weight in the target group**

In this case, you can start to design the questionnaire, without doing a pilot study. If the behaviour is unintentional, information on the risk caused by the problem behaviour should be placed at the beginning of the questionnaire. If the behaviour is intentional, you can base the questionnaire on the theoretical model used the most in previous research; or you can introduce the main predictors of the problem behaviour (or of the behavioural change) in an existing model like TPB, which allows supplementary factors to be added. For example, the regular TPB model does not include the "habit" factor, which may be a relevant variable for you. In this case, you can take habit (with its measures) from the *Theory of Interpersonal Behaviour* (see *Theories that predict behaviour,* pp. 60-69) and add it to the TPB model.

■ **You have some information on the main predictors in the literature, but you know that certain elements are missing**

If some information is missing from the literature, you can obtain it with additional research. For example, if you have information about attitudes towards the behaviour but there is no information on perceived risk, then it might be necessary to carry out a pilot study (see Box 24).

■ **You have no information on the main predictors or the information you have is not up to date**

In this case, you should first select a theoretical model on which to base your research. You can select this model from the various ones discussed in Part I and let your choice be guided by the models you found in the literature review. For example, if the campaign is not combined with another action and you see that subjective norms can have a great influence on road users, you can use the TPB model. If the campaign is combined with enforcement, you can use the *Health Belief Model* since it takes perceived threat into account. Once you have chosen a model, you need to gather information on each factor in the model by conducting structured interviews on a small sample of road users belonging to the target audience (usually 10 to 20 people). After that, you should select the most frequently occurring responses from the interviews (see Box 24).

Box 24 ■ Steps for building a questionnaire based on TPB

To build a questionnaire based on the *Theory of Planned Behaviour* (TPB), you should follow the steps recommended by Ajzen (2002)[245,246].

If the problem behaviour is unintentional, you should give information on the risk caused by the behaviour at the beginning of the interview.

1 Carry out a pilot study by interviewing a number of people who are part of the target audience, to identify people's beliefs on the problem behaviour

The interview should be open and should focus on collecting three kinds of beliefs:

– Behavioural beliefs contributing to attitude (pros and cons of adopting the target behaviour).

– Normative beliefs contributing to subjective norms (individuals or groups most significant for participants, who might approve or disapprove that these participants adopt the target behaviour).

– Control beliefs contributing to perceived behavioural control (personal reasons, circumstances, and driving situations that would prompt them or prevent them from adopting the target behaviour).

2 Select the most frequently occurring beliefs

– The number of beliefs will vary according to the interviewee's familiarity with the behaviour (5 to 7 beliefs are generally enough).

3 Design the questionnaire

– Develop a scenario that fits with the target, the context, and the time.

– Example of a scenario:

Imagine that you are driving on a highway during the day.
The speed limit is posted at 110 km/hr but you are driving at 130 km/hr.

Formulate the questions and scales to answer.

Example. A questionnaire dealing with speeding on a highway could read as follows:

Attitudes

Behavioural beliefs

Driving 20 km/hr over the speed limit on a highway would make driving more pleasant.
Strongly agree 1 2 3 4 5 6 7 Strongly disagree

Outcome evaluations

As a driver, arriving quickly at your destination is:
Very negative 1 2 3 4 5 6 7 Very positive

Subjective injunctive norms

Normative beliefs

My partner thinks I should drive 20 km/hr over the speed limit on highways.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Motivation to conform

When it comes to driving 20 km/hr over the speed limit, how much do you want to do what your partner thinks you should do?
Not at all 1 2 3 4 5 6 7 Very much

> ***Subjective descriptive norms***
>
> *My partner usually drives 20 km/hr over the speed limit on highways.*
> *Strongly disagree 1 2 3 4 5 6 7 Strongly agree*
>
> ***Perceived behavioural control***
>
> Control beliefs
> *For me to drive 20 km/hr over the speed limit on a highway in the next two*
> *weeks would be:*
> *Very difficult 1 2 3 4 5 6 7 Very easy*
>
> *It is mostly up to me whether or not I drive 20 km/hr over the speed limit on*
> *a highway.*
> *Strongly disagree 1 2 3 4 5 6 7 Strongly agree*
>
> ***Intentions***
>
> *I intend to drive 20 km/hr over the speed limit on a highway within the next*
> *two weeks.*
> *Strongly disagree 1 2 3 4 5 6 7 Strongly agree*
>
> ***Self-reported behaviour***
>
> *If you consider your own behaviour as a driver, how often do you drive*
> *20 km/hr over the speed limit on a highway?*
> *Never 1 2 3 4 5 6 7 Very often*

How to reach the audience

Whether the target audience is segmented or not, it is very often necessary, during the campaign planning process, to conduct research to analyse how to reach and influence the target audience. Research on the target audience is important for knowing who your target audience is and how best to communicate with it (for example, knowing this group's use of time and media habits, knowing the specific places and times or "openings" where the audience can be reached). The advertising agency can perform this task with the assistance of researchers.

Research may show that, in order to reach the target audience, it might be useful to address the message not only to the core target audience (also called primary audience or main target) but to peer groups too (a secondary audience). The idea here is that the latter will see the campaign and prompt the core target audience to adopt the safe behaviour [1]. Note that the term "secondary target" is sometimes used to denote a second audience, less important than the primary audience, but not necessarily chosen for influencing the primary audience.

Besides looking for the time and place to reach the target audience, it is important to search for the factors that will get the audience's attention. In many cases, there is already a great deal of information in the in-depth analysis. If no marketing study

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1   For example, in 2006 LARSOA (www.larsoa.org.uk), a British organisation that carries out local campaigns, and the Bexley Road Safety Action Group launched a speeding campaign aimed at young people. They addressed a message to young passengers to prompt them to encourage the driver to slow down: one of the slogans was "Speak before it's too late".

on the audience is available, however, it will be necessary to conduct pilot studies on effective communication tools and strategies to reach the selected segments. For instance, pilot studies may be done using focus groups composed of 10-12 participants, individual interviews, or questionnaires conducted among participants who are representative of the selected segments.

When all the information have been collected, it's time to update the creative brief (see Box 25) with the new information you have obtained.

Box 25 ■ Updated creative brief for a speeding campaign (added elements are shown in italics)

- **Problem description:** statistics on accidents due to speeding, data on speeding offences and behaviour (observed and self-reported), types of roads where speeding problems are most often seen, types of road users involved, etc., *background and probable causes of speeding behaviour (intentional or unintentional etc.), elements that predict and explain speeding behaviour (based on theoretical models), main predictors of safe behaviour*
- **Context of the problem:** speed management and enforcement system, speed limits, fines for speeding, enforcement level, previous measures to counter the problem, possible societal trends that encourage speeding
- ***Information from past (evaluated) anti-speeding campaigns:*** *objectives, target audience(s), theoretical framework used, evaluation results, etc.*
- **Target audience(s):** audience(s) most involved in the problem behaviour, for example male drivers ages 20-25, *typical motivations, characteristics and behaviours of the target audience, its awareness of the problem, habits, beliefs, perceived risk, etc.*
- **General goal of the campaign:** to reduce speeding-related accidents by influencing speeding behaviour of target audience(s)
- **Campaign stakeholders and partners:** for example, national and local police forces, road victims' associations, local governments, insurance companies (sponsor), etc.
- **Possible media and distribution channels:** network of road billboards, network of insurance brokers, etc.
- **Total available budget:** including the budget for evaluation
- **General time frame for the campaign:** for example, October-November

2.4 Defining the campaign's specific objectives

This stage consists of translating the general goal of the campaign (see *Identifying and defining the problem*, pp. 180-183) into specific objectives, that is to say, setting forth hypotheses on the campaign's expected effects. This will be done by the initiator in collaboration with the researchers and/or advertising agency, on the basis of available data and research as well as studies carried out during the in-depth analysis.

The specific objectives will be defined in accordance with the target audience and its behaviour and beliefs. They should be contextualised, i.e., linked to the place and time where the problem behaviour occurs and was observed. Specific objectives can be subdivided into primary and secondary objectives.

Primary objectives

The primary objectives define which behaviour needs to be changed in order to achieve the general goal of the campaign [1]. While the overall goal may be to decrease the number of road accidents, the number of offences, and/or the frequency of the problem behaviour, it is necessary to set more specific objectives, mostly in terms of behaviour change, adoption of a new behaviour, or strengthening of a safe behaviour.

The primary objectives will guide the formulation of hypotheses for evaluating the campaign. For example, the campaign should achieve one or more of the following objectives:

– Decrease the number or severity of road crashes.
– Decrease the number of offences.
– Decrease the frequency of adoption of the unsafe behaviour and/or increase the frequency of adoption of the safe behaviour, measured with observed data (current behaviour).

The overt behavioural objective should be the primary objective of the campaign, and ideally it should also be the most important objective to consider when evaluating the success of the campaign. In some cases, however, overt behavioural change might not be within the scope of just one campaign; in that case, behavioural intentions can be used as a primary objective.

Depending on the type of behaviour, it might also be very difficult or even impossible to measure observed behaviour (e.g., in case of driver fatigue). If so, self-reported behaviour may be used as an alternative.

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1   The primary objectives refer to the outcome evaluation, which is discussed in *Evaluating campaigns*, pp. 150-168.

Secondary objectives

The secondary objectives are related to the factors that can contribute to achieving the primary behavioural objective (i.e., make the target audience adopt the safe behaviour). They can be defined in terms of knowledge, beliefs, or other elements that have an influence on the target audience's behaviour (see Box 26).

Box 26 ■ Translation of general objectives into specific objectives in the Scottish "Foolspeed" campaign (1999-2001) to reduce speeding[146]

The primary objective of the Scottish "Foolspeed" campaign (1999-2001) was to reduce speeding on Scotland's roads.

The target group of this road safety communication campaign was the general driving population in Scotland, although a key target subgroup was drivers with a known tendency to speed, particularly males ages 25 to 44 with a professional, white collar, or clerical job.

A basic assumption for the campaign was that if the psychological mechanisms that motivate drivers to speed are identified, there is a potential to develop interventions that could influence those mechanisms and thereby lead to changes in speeding behaviour.

Insofar as the *Theory of Planned Behaviour* (TPB) is concerned with predicting specific behaviours, it was regarded as a useful tool for identifying and understanding psychological influences on speeding.

The main TPB predictors used to explain behaviour are behavioural beliefs, normative beliefs, and control beliefs.

The primary objective – to reduce speeding – was thus translated into the following specific objectives:
–   Influence behavioural beliefs (attitudes) about the consequences of speeding, particularly the likelihood of being caught by the police, putting pedestrian lives at risk, or causing an accident.
–   Influence normative beliefs (subjective norms) about how significant others such as family and friends perceive speeding.
–   Influence control beliefs (perceived behavioural control, PBC) by reminding drivers that they are responsible for their own driving decisions and have a choice about their speed.

The evaluation showed that the campaign was effective in triggering the desired knowledge, belief, and behavioural outcomes, and had a significant effect on attitudes and affective beliefs.

Just like the primary objectives, the secondary objectives will also guide you in formulating hypotheses for evaluating the campaign. For example, the campaign should achieve one or more of the following objectives:

– Change beliefs, attitudes, norms, and perceived control in the target audience. If the campaign is combined with police enforcement, then the goal might be to increase perceived threat, e.g., subjective risk of being caught by the police.
– Increase knowledge in the target audience. More knowledge might be required in the targeted individuals before they will perform the safe behaviour (e.g., drivers should know that speeding increases risk, a knowledge objective). However, it is important to stress that increased knowledge does not necessarily lead to changed behaviour.

For example, if based on the TPB model you have identified subjective norms as one of the main predictors of behaviour, you may want to gather additional information about which other people have the greatest impact on their behaviour and which people's norms are referred to by the target audience (for example, norms of friends, parents, society in general, etc). Among these different types of referees, you can try to identify the one that is most influential, i.e., the one that carries the most weight in explaining the problem behaviour (as in the "Speak Out!" campaign in Norway, see Box 28, pp. 222-223).

The secondary objectives will also help explain why the behaviour did or did not change.

To better understand primary and secondary objectives, let us imagine the following example:
– From road-crash statistics, you have learned that there is an increase in night accidents on two-way roads, in which mainly young male drivers are involved; you have also learned that speeding is the main problem in this type of accident.
– As a result, you decide to conduct a campaign to modify the problem behaviour (speeding) of this population (young male drivers) in the given circumstances (two-way roads at night).
– During the situation analysis, you find survey results indicating that some young drivers are not aware of the accident risk related to speeding. Furthermore, research based on the *Deterrence Theory* (see p. 68) tells you that the main predictor of this behaviour is the subjective risk of being caught by the police.
– Based on this information, you decide that your campaign should combine information on the risk of speeding with information on increased enforcement. The primary objective of your campaign will be to reduce the number and severity of road crashes due to speeding, by getting young drivers to respect the speed limits on two-way roads. The secondary objective might be to influence this behaviour by increasing their subjective risk of being caught.

In many cases, the same campaign may be able to meet the primary and secondary objectives. However, even if the primary objectives have not been reached, some or all of the secondary objectives might be achieved. In that case, the campaign will have had a positive effect.

The campaign's specific objectives will serve as guidelines in developing the campaign strategy in the next step (see *Designing the campaign and the evaluation,* pp. 221-263).

2.5 Gathering information from evaluations of past campaigns and other actions or programmes

Evaluation is an essential part of any road-safety campaign since it helps improve not only the current campaign but also future ones (see Box 27).

Box 27 ■ Main reasons for evaluating a road safety communication campaign

It is of particular importance to evaluate road safety communication campaigns. Information gained from evaluations will help you to:
–   Supervise the implementation of the campaign and take corrective action if needed
–   Know if the campaign is meeting its objectives (i.e., if it is working or not)
–   Learn whether the campaign has any unexpected benefits or problems
–   Know if the effects of the campaign justify its cost (the evaluation can provide accountability to funding sources, stakeholders, partners, and policymakers, which should facilitate future fundraising)
–   Know what works and doesn't work so that in future campaigns, you can avoid past mistakes and benefit from successful features
–   Provide information for reaching similar targets in the future
–   Provide information for improving implementation of future campaigns and avoid the risk of implementing ineffective ones

In this step, the evaluator will determine what is required (evaluation variables, methods, tools, etc.) for each of the specific objectives defined. To do so, he/she will use the information from evaluations of past campaigns and other actions that were gathered during the situation analysis. To test the primary objectives, the evaluations will rely on surveys, observations, and statistics on road crashes and offences; to test the secondary objectives, they will look at knowledge, beliefs, or subjective risk.

In many cases, this step will provide information on evaluations of past campaigns and other actions aimed at the same problem behaviour or a closely related one. When evaluations of past campaigns and other actions provide clear conclusions, they mainly:
–   Give examples of suitable designs, evaluation variables, and tools for the type of evaluation that you are planning.
–   Allow you to compare the results of your campaign with those of past ones and assess if your campaign was more effective or not.
–   Give information on the length of evaluation periods.

Concluding recommendations

To perform the situation analysis, you should take the following steps:

Thoroughly analysing the problem and possible solutions

You should complete the analysis of the problem, seeking available information from four sources:

- Qualitative and quantitative studies to analyse the problem behaviour in depth
- Research on theoretical models to explain motivations underlying the behaviour
- Past campaigns and other actions or programmes
- Marketing studies on the target audience

Then you should synthesise available information on the problem behaviour and its solutions. It is very likely that existing data are insufficient, at least with regard to the target audience.

Deciding whether to segment the audience

You should determine whether the target audience needs to be segmented or not. In many cases, it is advisable to segment the audience in order to approach each subgroup according to its different needs and characteristics (lifestyle, culture, etc.). Market segmentation should be conducted by the advertising agency. Once you have defined the different segments, you should evaluate them and select one or more to be targeted, in order to reach them as effectively as possible by gearing your communication strategies to each one. Then, you should determine how to reach the target audience and its segments based on the synthesis done on the previous sub-step. You should also update the creative brief (or communication brief) at this time.

Determining how to act on main motivations and reach the audience

First of all, you have to find out whether the behaviour is intentional or unintentional, in order to know which motivational factors to act upon and conduct additional studies to get this information if necessary. After synthesising the information already gathered, which is probably incomplete (data is missing or out-of-date), there are three possibilities for conducting additional research: (1) you have ample information on the main predictors for the problem and/or safe behaviour but you want to know which carries the most weight in the target group, (2) you have found only some information and you are aware that certain elements are missing, or (3) you have no information on the main predictors. Depending on which of these cases applies to you, you may decide to use a pre-existing model as such, you may adapt a model that is in line with the main predictors related to the problem behaviour (e.g., *the Theory of Planned Behaviour*), or you may need to round out your information with additional research. For example, research may show that in order to reach the target audience, it might be useful to address the message not only to the core target audience (also called primary audience or main target) but also to peer groups (secondary audience).

Defining the campaign's specific objectives

- ■ Primary objectives: you should define which behaviour is to be adopted by the target audience in order to achieve the general goal of the campaign.
- ■ Secondary objectives: you should identify other factors than can contribute to achievement of the primary objectives such as knowledge, attitudes and norms.

Gathering information from evaluations of past campaigns and other actions or programmes

In this step, you need to examine the design, evaluation variables, methods, and tools used for each of the specific objectives defined, based on evaluations of past campaigns and other actions or programmes compiled during the situation analysis.

Designing the Campaign and the Evaluation

During the previous two steps, data were gathered and analysed to better define the problem behaviour and target audience; the specific objectives of the campaign were determined, and the campaign-evaluation method was devised. Now it is time to start designing the campaign itself – perhaps combined with other actions or programmes – and planning how to evaluate it. In this step, you will need to answer the following questions: "What should we do?", "How should we do it?", and "How will we know if the campaign is working or not?"

To do so, you should perform the following sub-steps (see Diagram 4)

Diagram 4 ■ *Sub-steps in designing the campaign and the evaluation*

3.1	**Developing the campaign strategy**

Defining the strategy

Developing the message

Selecting the media and defining the media plan

Developing and pre-testing the message and slogans in their full context

3.2	**Designing the campaign evaluation**

Defining the objectives of the evaluation and developing evaluation measures

Choosing the evaluation design and sample

Defining methods and tools for collecting data

Planning the evaluation

3.1 Developing the campaign strategy

The campaign strategy will be developed on the basis of specific objectives defining how you will meet the campaign's general goal. That is to say, the strategy will establish how you will influence the targeted individuals in order to get them to stop the problem behaviour and adopt the safe behaviour. Devising the campaign strategy will allow you to define the campaign's objectives in operational fashion. A useful guiding principle here is known as "SMART", whereby the operational objectives should be Specific, Measurable, Achievable, Realistic, and Time-bound[247,248]. The specific objectives, when operationalised in this way, will serve as a road map for designing the campaign and its evaluation.

The campaign strategy should be embedded in a broader, overall social-marketing strategy directed at changing behaviour (see Box 28). Moreover, the strategy should be based on the theoretical model that you have chosen for predicting and explaining the problem behaviour, i.e., the model you used to define the campaign's specific objectives in the previous step (see *Analysing the situation,* pp. 201-219). Once the campaign strategy is defined, an outline of it should be added to the creative brief.

Box 28 ■ The campaign strategy of the "Speak Out!" campaign in the Norwegian county of Sogn and Fjordane: reduce injuries and fatalities among young people, especially 16 to 19 year olds (adapted from Ulleberg & Christensen, 2007)[249]

The "Speak Out!" campaign was begun in 1993 and has been run every year since then. Its objective is to reduce injuries and fatalities among young people, especially those 16 to 19 years old.

The point of departure for the campaign was that only a minority of young people engage in careless, risky driving and that most young people are aware of the dangers related to reckless driving. However, the latter group, called the "positive" youth, needed support in handling group pressure and in making a stand for the safe behaviour they adopt.

The focus of the "Speak Out!" campaign was to support and encourage the "positive" youth to take responsibility in a way that would influence the social norms and behaviour of the group.

The campaign strategy was based on sales and marketing principles for tapping into an already existing need and a desire for social acceptance. Through information and enforcement, the positive youth were supported and encouraged both to tell other young drivers to drive more carefully and to avoid riding with reckless drivers.

Since the positive youth had already acknowledged the problem and knew what constituted safe driving behaviour, it was important that the campaign:
–   Avoid adopting a superior, instructive or educational tone that uses the "pointing finger" (for example, "If you don't do what we tell you to do, you'll have an accident"), and avoid using fear.
–   Show by the tone that you trust and respect these young people.
–   Take young people seriously by talking with them, not at them.

Since implementation in Sogn and Fjordane in 1993, the "Speak Out!" strategy has been used in several other counties in Norway in view of reducing injury accidents among young people.

If the campaign is aimed at having young drivers reduce their driving speed on two-way roads, the next step is to design a strategy to reach this specific objective.

You might have learnt that key elements for influencing the target's behaviour are the subjective risk of being caught by the police, subjective norms, and knowledge about the dangers of speeding. Consequently, you have chosen to conduct a campaign combined with increased enforcement.

To reach the specific objectives, your strategy will consist of increasing the number of police patrols on two-way roads, combined with informing young drivers about the danger of speeding on this type of road and about the increase in speed-limit enforcement that will be implemented on this type of road. This kind of information could, for instance, be displayed on variable message signs (VMS) along these roads.

Your next step will be to operationalise the specific objective. As far as the communication is concerned, for example, your objective will be to involve young drivers as much as possible and lead them to change their problem behaviour. This will be done via the message and slogan designs and their dissemination, including the media (e.g., VMS) and the media plan. The operational objectives related to enforcement will include the number of patrols, a mapping-out of the areas with the dates and hours of patrols, etc.

In collaboration with the initiator and any researchers involved, the advertising agency will discuss and define the campaign strategy (including strategic media choice). The agency will develop creative approaches that will be tested and validated. It will develop the campaign on the basis of the creative brief provided by the initiator. To make sure that the campaign strategy will be tailored to the problem behaviour and the target audience, the creative brief should be as detailed and clear as possible.

Defining the strategy

In this stage, you will focus on defining the possible types of campaigns, the scale of your own campaign, and possible accompanying actions that will make up your strategy. The strategy can take place at different scales: locally, regionally or nation-

ally, depending on the problem behaviour and the target audience. The strategy will be developed based on the areas where the problem occurs, how the target audience can be reached, and how it can be influenced.

To get an idea of the possible strategies you might use, you can rely on information from previous campaigns that you gathered during the situation analysis, for example, combining a national campaign with local actions, enforcement, etc. You can also focus your strategy on the time and place where the target audience adopts the unsafe behaviour. For example, in case of a drinking-and-driving campaign, you might intervene at the moment when people make the choice to drink or not to drink alcohol, using leaflets and a small gift (key ring or placemat) to target the concerned drivers (see Box 29).

Box 29 ■ Campaign strategy for the "Bob" campaign against drinking and driving[250]

"Bob" is a road safety communication campaign against drinking and driving conducted initially in Belgium, and then adopted by more than 15 EU member states. The campaign has been organised in partnership with associations of brewers, which opens up direct access to thousands of pubs and restaurants through the brewers' distribution channels.

Such a partnership facilitates the combination of a mass-media campaign (billboards, radio and TV spots) with direct marketing in nearly every pub, café, or restaurant in the country: a free "Bob" key ring is offered to those who don't drink alcohol and agree to drive their friends home, a free non-alcoholic drink is offered to the designated drivers, etc.

For added support, the media campaign has been combined with enhanced enforcement by the police, especially at times and places where there is an increased risk of driving under the influence (such as on weekend nights and small country roads often used to avoid areas where police are likely to be stationed).

If you decide to combine a national road safety communication campaign with local actions, supportive activities might be conducted by local authorities, such as the city police or city council, volunteer associations, schools, specialised firms (e.g., hostess agency), or local media partners. For instance, marketing in the street could be done in collaboration with local radio stations to reward pedestrians for safe behaviour when crossing the street. At a regional or national level, combined actions can be carried out by the national or regional police forces (e.g., enforcement, see Box 30).

Box 30 ■ Combined actions in the STEP programme (North Carolina, U.S., 1993-1994): increasing seatbelt use

The Special Traffic Enforcement Program (STEP), which involves periodic waves of highly publicized enforcement of short duration, is a good example of how to execute combined actions[251].

The model was first demonstrated in Canada in the 1970s, but has since been implemented in several European countries and in the United States, where it is currently used in nearly every state to improve seatbelt usage rates. Some STEP programmes have also focused on enforcement of other violations as well, such as speeding or driving while impaired.

A STEP programme usually includes:
1 Data collection: before, during, and immediately after media and enforcement phases.
2 Earned and paid publicity announcing strict enforcement.
3 Highly visible enforcement each day of the enforcement period.
4 A media event announcing programme results.

North Carolina used the STEP model in its long-term programme to increase the seatbelt usage rate[252]. The programme called "click it or ticket" was implemented in 1993 and was the first statewide occupant-protection STEP attempted in the United States.

–   The first programme included two weeks of public information on the importance of seatbelt use and the upcoming enforcement, followed by 3 weeks of enforcement, 2 weeks without, and a fourth week with enforcement. Paid media advertisements emphasizing enforcement activities ran throughout the programme.

–   The second programme, intended as a "booster shot", replicated the fall 1993 programme, but it was shortened to 3 weeks instead of 4, and less media advertising was purchased (1 week).

If you came across a campaign that used the same theme for the same audience, was well-designed and rigorously evaluated, and generated positive outcomes, you may want to adapt it rather than develop a completely new campaign. In that case, the temptation might be great to simply replicate the campaign in its original form, without any kind of adaptation – it is better, however, not to skip the adaptation step.

Indeed, many factors can vary from one place to another. These include the target's characteristics (lifestyle, culture, etc.), the extent of the problem behaviour and elements likely to influence it (knowledge, beliefs), infrastructures (e.g., whether taking place in flat areas where there are more straight roads vs. in mountainous regions, whether in highly populated countries with a denser road network and more traffic, etc.), and local traffic laws (e.g., speed limits, specific fines and penalties for the violation).

Developing the message

When communicating with large groups of people, whether a specific target group or the whole population, the message needs to be believed by the audience (credible), honest and possible to comply with (trustworthy), used repeatedly (consistent), easy to understand (clear), able to generate change (persuasive), relevant to the person (relevance), and appealing (attractive) (see *Message-execution strategy*, pp. 124-125).

When developing the message, there are two aspects to consider: one is the actual content of the message – what will be said – and the other has to do with the structure and style of the message – how and by whom it will be said. Most of the knowledge needed to develop the message has already been collected (during the in-depth analysis). Not only the content, but also the structure and style of the message that will be directed at the target audience, should be considered very carefully. The creative staff of the advertising agency will rely on the brief provided by the campaign initiator when devising the various communication concepts (see *Creative brief*, p. 195).

If message development is outsourced, the campaign initiator should supervise the work with great care: a clear procedure concerning the various sub-tasks must be established between the creative team and the campaign initiator. This procedure must then be systematically validated by the campaign initiator on a step-by-step basis. This implies substantial interaction between the two parties in order to maximize the chances of developing a message that follows the creative brief.

As to how to influence the target audience with the campaign message, the strategy involves knowing how to use the factor(s) that you identified from the literature review, along with any additional research conducted on the target audience (see *Gathering more information about the target audience*, pp. 120-121).

It is important to realise that there is a clear distinction between "campaign message" and "campaign slogan". The *message* is the central idea that the campaign will convey, which is why it is sometimes called the "core message", e.g., "If you go out to have a drink with friends, always designate a driver ahead of time." The *slogan* is how this message is translated in the actual campaign, e.g., "It's time to party when Bob drives."

Developing the content of the message

In line with the principles of social marketing, you need to consider the following elements when developing the message content (see Box 31, p. 229):
–   The specific objectives of the campaign (based on the main predictors of behavioural change).
–   The characteristics of the problem behaviour and/or safe behaviour (e.g., frequency, place of adoption).
–   The perceived benefits of adopting the safe behaviour.
–   The perceived cost of adopting the safe behaviour.
–   The place and time where the safe behaviour should be adopted.

Normally, these pieces of information are already available, since they were gathered during the situation analysis (see *Analysing the situation*, pp. 201-219). For example, if your campaign is associated with enforcement, this fact should be taken into account when developing the content of the message.

The message should be able to challenge people's preconceived ideas. Let's say you have conducted research among young male drivers to identify the reason why they do not respect speed limits. The results from this research, based on the Theory of

Planned Behaviour, might indicate that the main predictor of the problem behaviour is a subjective norm (that is, these drivers believe that others accept their behaviour). In this case, the content of the message could be "Do not let yourself be influenced by other drivers' opinions"; or the content might focus on showing that other drivers actually disapprove rather than approve of the behaviour.

As a next step, you will decide on the structure and style of the message.

Devising the structure and style of the message

Once the content of the message is defined, it is time to decide upon the structure and style of the message. In order to achieve the campaign's specific objectives, the message has to capture the target audience's attention, raise their awareness, and get them to accept it.

The actual structure and style of the message are created by the advertising agency, in line with the creative brief and the campaign objectives, provided your budget allows you to outsource the development of the message. Should you be developing your message in-house, you can apply the following ideas:

The message structure can be either one-sided or two-sided (see *Structure of the message*, pp. 126-127),), which essentially means that you have to choose whether or not you will present counterarguments to your core message. The choice will depend on the target audience and on the campaign's goal.

When deciding upon the style of the message you should look to the research findings from the four sources noted in the situation analysis (i.e., qualitative and quantitative studies on the problem behaviour, research on theoretical models that explain the motivations underlying the problem behaviour, past campaigns and other actions, and marketing studies on the target audience). These findings might, for instance, give you an idea of the effectiveness of positive vs. negative framing in leading your target audience and its segments to adopt the desired safe behaviour. Different styles may also be selected according to the characteristics of the target audience: informative, call-to-action, positive emotional (e.g., empathy, warmth, love, humour, affection), negative emotional (e.g., retroactive, fear appeal), etc.

When crafting the message, it is also useful to investigate what has been most effective in past campaigns and other programmes. For instance, some practitioners refuse to use negative messages because they have noticed from other campaigns that the safe behaviour is more likely to be achieved when a positive approach is used rather one than showing accidents. A negative message might make use of a fear appeal to address a topic, although this technique has generated considerable debate about the pros and cons. Some authors claim that fear appeals are effective in changing behaviour; others claim that such appeals do not have proven advantages over other message styles [1].

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[1] For more details about fear appeals, see *The message*, pp. 123-136 and the following website: http://www.swov.nl/rapport/Factsheets/UK/FS_Fear_appeals.pdf

We recommend pre-testing the message to find out if the chosen approach (negative vs. positive framing) is suitable for the type of problem behaviour and audience addressed in the campaign. For example, if your message communicates a fear appeal, you can pre-test it using Witte's Risk Behaviour Diagnosis (RBD) Scale[253]

Table 18 ◼ *Risk Behaviour Diagnosis Scale*

		Strongly Disagree->Agree						
1.	[Recommended response] is effective in preventing [threat]:	1	2	3	4	5	6	7
2.	[Recommended response] works in preventing [threat]:	1	2	3	4	5	6	7
3.	If I [do recommended response], I am less likely to get [threat]:	1	2	3	4	5	6	7
4.	I am able to [do recommended response] to prevent getting [threat]:	1	2	3	4	5	6	7
5.	I have the [skills/time/money] to [do recommended response] to prevent [threat]:	1	2	3	4	5	6	7
6.	I can easily [do recommended response] to prevent [threat]:	1	2	3	4	5	6	7
		EFFICACY =						
7.	I believe that [threat] is severe:	1	2	3	4	5	6	7
8.	I believe that [threat] has serious negative consequences:	1	2	3	4	5	6	7
9.	I believe that [threat] is extremely harmful:	1	2	3	4	5	6	7
10.	It is likely that I will get [threat]:	1	2	3	4	5	6	7
11.	I am at risk for getting [threat]:	1	2	3	4	5	6	7
12.	It is possible that I will get [threat]:	1	2	3	4	5	6	7
		THREAT =						

The RBD is grounded in the Extended Parallel Process Model (see pp. 129-130), and is a very useful tool for identifying the dominant type of control process (i.e., danger control or fear control). More specifically, the RBD is a 12-item scale (see Table 18) that assesses the target's perceived efficacy (i.e., response efficacy and self-efficacy) and perceived threat (i.e., severity of the threat and susceptibility to the threat). Ratings are made on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). To calculate the results, you should sum the threat score and efficacy score separately, and then subtract the threat score from the efficacy score. This yields the critical value, which can be interpreted as follows:

- A positive value indicates that efficacy is stronger than threat (i.e., danger control). Messages can focus on increasing perceptions of severity and susceptibility (with appropriate efficacy messages) in order to trigger more behavioural change.
- A negative value indicates that threat is stronger than efficacy (i.e., fear control). Messages in this case must focus on efficacy only (because people are already too frightened).
Before using this scale, you must clearly define the threat and the recommended response in order to incorporate them into the scale.

To generate ideas for developing the message style (see Box 31), you may use one or more of several possible tools, including:
– Individual interviews with a representative sample of the target audience.
– Focus groups with a representative sample of the target audience. This is a form of qualitative research in which a group of people is asked about their attitudes (and other relevant variables) towards a product, concept, advertisement, idea, etc. Questions are asked in an interactive group setting where participants are free to talk with other group members.
– Creative brainstorming sessions (brainstorming is a creative, group technique designed to generate a large number of ideas to solve a problem).

Box 31 ■ Content and style of the message in the Scottish "Foolspeed" campaign: reduce speeding[146]

The general objective of the Scottish "Foolspeed" campaign (1999-2001) was to reduce speeding on Scotland's roads. The specific objectives were to influence behavioural beliefs (attitudes), normative beliefs (subjective norms), and control beliefs (perceived behavioural control). In order to identify the component beliefs likely to be the most important in the formation of attitudes, subjective norms, and PBC regarding speeding, research was conducted via a two-step process:
1 A literature review of previous TPB studies on driving violations.
2 Focus-group forums (8 focus groups with male and female drivers ages 18-44).

The focus-group forums also provided insight into drivers' feelings about road safety advertising. Participants' comments suggested that key elements of the campaigns are credibility – i.e., the depiction of realistic, non-extreme driving events – and sympathy for daily pressures experienced by drivers, such as congestion and "hassle". This generated the hypothesis that a low-key style depicting everyday driving scenarios would be equally, if not more, effective in engaging audiences than a hard-hitting approach. In line with the credible and realistic style that was chosen, it was also decided that the advertising would feature recognizable locations such as well-known Glasgow streets.

As for the content of the message, it was decided to develop three television/cinema ads addressing the three main predictors included in TPB: attitudes, subjective norms, and perceived behavioural control, respectively. The outline of each ad was based on findings in the research:
– The ad designed to address attitude ("Mirror") sought to challenge the beliefs that speeding in town saves time, that a speeding driver is fully in control of the

car, that he/she is able to stop quickly in an emergency if necessary, and that speeding cannot cause road accidents.

–   The ad targeting subjective norms ("Friends and Family") sought to highlight the mismatch between a driver's favourable view of his/her own driving and the irritation or anxiety it may arouse in passengers, and also to increase the driver's motivation to drive more safely to please others around him/her.

–   The ad addressing perceived behavioural control ("Simon Says") sought to increase drivers' control over their speeding and to challenge drivers with the sense of "being responsible for the way they drive", even when there are internal and external pressures that might encourage drivers to speed.

Choosing the campaign identifiers

Campaign identifiers are visual or audio elements that bring consistency to a campaign or a set of campaigns; they give identity to a campaign and/or indicate the organisations involved in it. Spokespersons, logos, mascots, and brands can all be used as campaign identifiers.

The task of choosing the campaign identifiers is not always assigned to an outside agency. Indeed, many organisations (such as NGOs) will not have the opportunity to become a full-time "customer" of an advertising agency. Thus, time and money are sometimes saved on certain message-development tasks (such as creation of logos, posters, etc.) by doing the work in-house. This can be more cost-effective than working with an agency.

Spokespersons

In order to enhance identification and acceptance of the campaign, it is often appropriate to use one or more spokespersons to deliver the message. Credibility is the key issue here. The very same message tends to be judged more favourably when presented by a communicator of high credibility than by one of low credibility. Clearly, people's reactions to a message are significantly affected by cues to the communicator's intentions, expertise, trustworthiness, attractiveness, motives, source-target similarity, and message origin.

Moreover, the credibility of a message can be affected by both the media vehicle itself, i.e., the newspaper, magazine, or TV channel where the message is run, and the communicator's relationship to the message's content.

Spokespersons may be well-known personalities, athletes, show-business celebrities, witnesses, and so on. The spokesperson chosen should be one who inspires trust in the target audience, and who is a likeable, sympathetic character, etc. Spokespersons who are very well known, popular, and trusted by the target audience can tremendously increase acceptance of the campaign message.

However, this approach also has its limitations because it relies on a person whose actions outside the context of the campaign are not always controllable. Indeed, if the spokesperson's personal actions, opinions, etc. go against the campaign

message, this will cause a loss of credibility (for instance, when a spokesperson chosen for an anti-speeding campaign is caught speeding).

Logos

A campaign may also be identified by a logo, which serves as a kind of trademark for the campaign and increases campaign recognition by the public. Logos can be used in several ways. Generally, the initiator's logo is used as a signature on each campaign sponsored by that same organisation. This allows easy identification of the campaign initiator as the sender of the message.

In addition, a separate logo specific to the campaign itself may be used, in accordance with the campaign theme. This increases recognition for the campaign, e.g., the Bob logo for the European drinking-and-driving campaign.

Apart from the logo that serves to identify the campaign initiator or the campaign itself, several other logos may be used to identify:

–   Other organisations involved in the campaign: there might be a combination of logos from sponsors, partners, and/or stakeholders of the campaign; these logos are used as a signature but are generally separated from the initiator's logo, e.g., the European Commission (EC) logo would be seen on EC-supported campaigns.

–   The general campaign or an element of the specific campaign: e.g., the logo of the EC's "25,000 Lives to Save" or the logo of the United Nations' "Global Road Safety Week".

More generally, several combinations of logos can be considered. For instance, you might use one logo for a particular campaign, associated with the logo used for every other campaign by the same initiator. However, too many logos may blur the image and recognition of the campaign partners. Commercial sponsors may be particularly concerned about obtaining sufficient visibility as a return for the money they have invested in the campaign.

Mascots

A mascot can be a powerful campaign identifier (see Box 32). Typically, a mascot is a human or animal figure that stands as a symbol for the entire campaign. If a mascot is embraced by the target audience, this may greatly contribute to the "likeability" of the campaign or its ability to produce a positive emotional experience in the target audience. This in turn facilitates the acceptance of the message. However, likeability does not necessarily mean that the target audience will accept the message and adopt the desired safe behaviour – people can enjoy a mascot and remember it without having it influence their behaviour. Sometimes, it is even better if the audience doesn't really like the campaign, especially if you use a fear appeal (see *The message,* pp. 123-136).

Box 32 ■ *Mascots: example from the Euchires project*[254]

Mascots can be incorporated into merchandising items to support a media campaign.

In this context, the 2005 "Euchires" campaign, a European public-awareness campaign on the use of seatbelts and restraint systems for children, was centred on the "Armadillo" gadget ("Goochem" or "Gordeldier" in Dutch, "Tatouceinture" or "Zou le Tatou" in French, etc.), a toy designed to make wearing a seatbelt more pleasant for 4- to 12-year-old children.

Brands

Another technique often used to create a campaign identity is "branding". A brand is a name, term, sign, symbol, design, or combination of these, intended to identify the product[138]. The brand name must be easy to pronounce, recognize, and remember; it should capture or define the product's benefits, highlight the product's qualities or appeal, and be distinctive (see Box 33). As with mascots, brand names should not resemble or allude to other existing products or trademarks. They should be thoroughly pre-tested and trademark-protected.

Box 33 ■ *Brands: the Bob campaign example*[255]

In 1995, to combat drinking and driving, Belgium launched its first awareness-raising campaign on the "Bob" theme, the Pan-European Designated Driver Campaign, in order to encourage people travelling by car to always designate somebody who will refrain from drinking and make sure that the others get home safely.

Since then, with the support of the European Commission, the Bob concept has been implemented in the other EU member states, under the name "Lince" in Spain, "Designated Dessie" in Ireland, "Capitaine de soirée" or "Capitaine Sam" in France, "Stooder med Stil" in Denmark, "Bob" in the Netherlands and Greece, and "Joker" in Portugal.

The designated driver concept has been marketed as a brand name with high recognition and popularity scores in those countries where it has been introduced.

Logos, mascots, and brands should be developed and chosen carefully, since they can have adverse effects if (part of) the target audience dislikes the mascot, brands, logos, or any aspect of them.

Logos, mascots, and brands can be created entirely by the advertising agency and approved by the campaign initiator, or they can be designed jointly by the agency and the initiator. Usually, this is the advertising agency's job, since it is also responsible for performing the other creative design work.

Pre-testing the message

Once you have decided on the content and style of the message (for example, different levels of fear appeal, negative or positive framing, etc.), you should validate your choices by pre-testing its content and style. This can be done by the advertising agency or another outside agency. Pre-testing enables you to improve and optimise the message before the actual implementation of the campaign. It provides more information about the strengths and weaknesses of the message, and helps to ensure that the message will reach the target, be understood, and influence the target's knowledge, beliefs, and/or behaviour, etc. We recommend pre-testing several messages on the target audience to which you are gearing the campaign.

When pre-testing a message, keep the following objectives in mind:
–   First, you should test for clarity, appropriateness, and attractiveness of the different types of messages for the target audience. The messages that are most easily understood, appropriate, and attractive should be selected.
–   Secondly, you should decide which of several messages should be selected. For instance, you may have three versions of the same message (high, medium, low fear appeal), or a positively vs. negatively framed message, etc. It is advisable to use the thought-listing task[207] to investigate how receivers in the target audience process the message (see *Thought listing task*, pp. 134-135). It is possible to predict the message's potential to induce[207] lasting attitude change, according to the way the message is elaborated[206,256]. If the thought-listing task shows that people recall more arguments linked to the message, you can assume that they are processing the information on a deeper level, which will lead to longer-lasting effects. If they do not recall many arguments, you can conclude that they are engaging in a heuristic or peripheral type of information processing, leading to more superficial effects (see *Elaboration-Likehood Model*, pp. 70-72, and *Thought listing task*, pp. 134-135).

After having carried out these steps, you will select the message that stimulates the most favourable thoughts and that has the highest potential to influence the target group's behaviour, either directly or indirectly.

To gather the pre-test data, you can rely on quantitative studies. Depending on the circumstances, you can also introduce a qualitative phase, with focus groups whose participants are representative of the target audience (20 to 30 participants).

Responses should be compared with the objectives recorded in the creative brief.

On the basis of the pre-test results, the message content and style can be adapted to align more closely with the campaign strategy and operational objectives.

The final stage involves having the ad agency (or another external agency) present its work to the initiator for approval. However, the customer (campaign initiator) should continue to take an active part throughout the development process.

After developing the message and pre-testing it, you will choose the media and draft the media plan.

Selecting the media and defining the media plan

By choosing the media and developing a media plan, you will define where and when your messages will appear (see Box 34). This step includes:
– Choosing from a variety of media types.
– Selecting specific media vehicles (e.g., magazine titles, radio programmes) and possible mediators who can join the campaign and potentially influence the target audience (e.g., police, educational workers, well-known personalities, spokespersons or advocates, etc.).
– Determining the timing for launch and implementation of campaign elements, which involves planning and scheduling the distribution of the campaign materials and supportive activities.

Box 34 ■ Media plan, and choice of media and possible mediators: the State of Connecticut's 2003 impaired-driving high-visibility enforcement campaign[257]

The aim of the 2003 impaired-driving high-visibility enforcement campaign conducted by the State of Connecticut (U.S.) was to reduce impaired driving and ultimately alcohol-related injuries and fatal crashes, particularly among young people ages 21 to 34.

The campaign consisted of both media advertising and enforcement, and ran for 11 months. The media component was concentrated in the two holiday periods during 2003 (the 4th of July and the November-December holidays) and was designed to create the perception of sustained enforcement between these two holiday periods.

To make the message reach the target audience, the following media mix and different value-added initiatives were used in the campaign:

– TV ads were placed on TV programmes often viewed by the main target audience on several broadcast and cable stations. One of the stations hosted a UCONN (University of Connecticut) men's basketball ticket giveaway that involved answering a series of DWI (Driving While Impaired) questions on the TV station's website. Contestants were referred to the campaign website to find the answers.

– 60-second radio spots were placed on seven different stations, aiming to reach both the potential offenders and their sphere of influence: friends, girlfriends, and families. The schedule was concentrated on Thursdays, Fridays, and Saturdays, using the day-parts of each station most likely to influence the target's decision about DWI.

– *Outdoor* publicity in the form of two billboards was chosen since billboards are seen by the audience while in their most relevant environment – their vehicles.

– *Public relations* included a coordinated and executed kick-off press conference (in relation to the 4th of July campaign), creation of press kits, setting up interviews, and news coverage.

– *In-bar events* were aimed at educating the target audience (men ages 21 to 34) on the dangers of drunk driving, in a fun, interactive way in their environment: the bar. Bar events were hosted by radio stations broadcasting live on location (at bars and nightclubs).

– *The website* for the campaign was developed to serve as the primary destination for individuals seeking information, insight, and knowledge about the issues involved in DWI enforcement, prevention, and education in Connecticut. The banner for the website appeared on the websites of television channels and radio stations.

– In cooperation with radio stations, *e-mail blasts* were sent out to their listener databases. The newsletters included a message about DWI. During the winter campaign, a ski weekend getaway was offered as an incentive to encourage website visitors to click-through the DWI message and get more information. The e-mail blasts occurred during peak holiday times when the target offender was most likely to be DWI.

An additional component of the campaign was the Safe Rides programme that consisted of free taxi rides for the public, between Thanksgiving and New Year's Eve every Friday and Saturday night (6 weeks). The public was encouraged to use Safe Rides via radio and in-bar events.

Choice of media and possible mediators

It is important to be creative in the choice of media. The first element to take into account when making this choice is the campaign budget. Indeed, each medium has its own advertising rates, which vary according to the medium itself, the media channel, and the time and place of insertion.

The media plan is usually put together by the media-buying agency in collaboration with the advertising agency. Media planning should be based on media research data (cost and efficiency of each type of media and media channel).

While the main criterion is the campaign budget, other sources of information should be considered when choosing the media and developing the media plan.

These include the target audience, the media strategy, and the campaign designer's experience. More specifically, the choice of media depends on the target audience's media habits, the geographic extent of the problem, and the advantages and disadvantages of different media types.

Target audience

The choice of media may be made according to the target audience's media habits, as ascertained by various methods such as marketing studies or audience studies (see Box 35). Since the time factor also plays a role in this choice, it is important to take into account any changes in media usage over time, as well as trends and preferences which evolve very rapidly. Indeed, many media concepts that are "hot" one year may be outdated by the next year. It might be particularly worthwhile to investigate the latest trends in electronic media, such as social networking sites (e.g., Facebook), sms, internet applications, etc.

Media research agencies specialise in analysing the number of viewers, readers, or listeners for each media vehicle, and defining the characteristics of each vehicle's audience. Media research data provide very important guidelines for buying media space and time.

Box 35 ■ A tool for collecting information on the target audience's media habits: the Print Measurement Bureau (PMB) poll[258]

> The PMB is Canada's leading syndicated study for single-source data on print readership, non-print media exposure, product usage, and lifestyles.
>
> The PMB has developed a valuable tool for print media measurement and related marketing data: the PMB poll, which surveys a large sample of respondents to characterize people's newspaper- and magazine-reading habits.
>
> For instance, English-speaking Canadians don't watch much Canadian TV, but mainly watch American TV instead. It is therefore easier to reach them via radio.

The media should be chosen according to "openings", i.e., the times, places, and situations where the audience will pay most attention and be able to react to the message, that is[166]:

– The time when the target is the most receptive, e.g., in a nightclub.

– The time when the target is most likely to adopt the problem behaviour. For example, concerning drinking and driving, in addition to the usual campaign media, it may be a good idea, as mentioned above, to communicate the message in bars when people are drinking, face-to-face, or with posters or placemats.

– The place where the target can be reached. It is often important to communicate in places where people expect it, i.e., to address people in a place where your message is relevant. For instance, for a bicycle education campaign geared to children, it is better to put posters at school or to communicate face-to-face than using the media.

– On the other hand, for certain campaigns it may be useful to communicate in places where it is NOT expected! The surprise element, the originality and crea-

tivity, can be important in making people aware of the campaign. For example, in a Belgian campaign promoting courtesy on the road, where the central campaign message was "Traffic is not a jungle", dummy monkeys were hung up on traffic lights at a number of crossroads in Brussels.

Geographic extent of the problem

The geographic area(s) where the problem occurs can determine the scale of the campaign: national, regional, and/or local (see *Road safety communication campaigns*, pp. 81-168). This will be a big factor in media choice. Accordingly, if road-crash and unsafe-behaviour data show that a problem is predominant in a certain region, it is logical to concentrate the campaign on that particular region and to use those media vehicles that provide particularly good coverage there. In other words: the geographic scope of the problem will influence or define the geographic scope of the campaign, which in turn will influence the media choice.

Advantages and disadvantages of various media types

Each media type has its own features. The choice of media will depend on these features and on the type of message. It is essential to communicate in a way that will appeal to the target audience. For instance, radio and outdoor billboards can reach people in their cars; this may be useful because it addresses drivers at the place and time when they actually make the choice between the safe or unsafe behaviour. Internet websites are not always adequate for reaching people because those who visit road-safety websites are perhaps already aware of the problem and therefore do not belong to the target audience. However, much depends on how you design and present the website, and how you get people to visit it (e.g., a road-safety message may be presented in an online quiz game).

If during the situation analysis, you found past campaigns and other actions on the same theme and target audience, you may rely on past experience with the chosen media in the present campaign. If the past campaign included some types of supportive activities, you will know which ones worked and which ones didn't. However, what works well in one situation does not necessarily work well in another. This means you cannot simply "cut-and-paste" solutions from past campaigns to a new campaign: you have to adapt them (see *How to adapt a campaign*, pp. 109-112). It is recommended that you test several concepts in order to know the best way to integrate supportive activities and promotional actions into the campaign (see *The message: importance of a pre-testing procedure*, pp. 133-136, and *Pre-testing the message*, pp. 233-234).

Media planning

The media planning task consists of scheduling the distribution of campaign materials (spots, billboards, website, etc.) and supportive activities. The media-buying agency will take care of setting up the media plan, recommending the use of specific media vehicles (TV or radio channels, magazine or newspaper titles, etc.), at different times.

For example, if you run a road safety communication campaign with young males as the primary target, you will conduct surveys to learn more about their TV-watching habits. If surveys show that young males watch football matches on TV, you can

design the media plan to include a high frequency of TV spots during the champion-ship period, as well as during specific matches.

The media plan will be developed on the basis of certain criteria:
– Timing and length of the campaign
– Advertising rates of each media and channel, demographic statistics of coverage, etc. in order to know where to buy effective space (data usually provided by the media-buying agency)
– Campaign budget
– Openings, i.e., where and when the audience can be reached

In some cases, it might be possible to borrow from media plans of past campaigns (without being too restrictive as to how many campaigns you examine).

Duration and frequency

We can distinguish two types of campaigns:
– Single-phase campaigns.
– Multi-phase campaigns.

If you have a modest budget, it is best to concentrate the campaign in one or two media with optimum frequency, over a limited time period. In this case, single-phase campaigns can be an option. Two weeks is the minimum duration, especially for radio and TV advertising. Campaigns that run less than two weeks barely get noticed by the public and consequently will lead to poor results. On the other end of the spectrum, there are "permanent" campaigns that run for perhaps an entire year or even longer ("permanent awareness-raising"). In this case, the frequency at which the target audience is exposed to the message should not drop below a certain minimum. Otherwise the campaign will not get noticed, because if media exposure is "spread out" too much, the effects will also be poor (for more details, see *Frequency*, pp. 146-147).

If your budget is larger, you have the choice between a single-phase campaign and a multi-phase campaign. The latter is recommended for longer campaigns. These are often split up into several "waves" with peak exposures at certain times, and can be combined with supportive activities, also in waves. Multi-phase campaigns have at least two distinct phases or waves of high media exposure alternating with off periods between the phases.

Whatever the phasing of your campaign (single-phase or multi-phase), using events or activities and attention-getters concentrated at a single point in time (one day to a few days) can be useful for attracting the audience's attention and increasing the prominence of the campaign message. Such activities rarely occur on a stand-alone basis. They usually fit into a longer campaign, for example, to introduce or wind up a campaign (e.g., the start of a bicycle campaign may be announced with a special event in which employees are asked to ride their bikes to work instead of taking their car; this event can potentially involve the participation of large companies who support the measure).

Time of campaign implementation

The timing of the campaign's implementation may depend on the following factors (see Box 36).
Weather conditions and seasonal characteristics:
–   In autumn/winter, days get shorter, so this may be a good time to launch a campaign promoting lights on bicycles.
Particular events:
–   On Christmas Eve and New Year's Eve people drink a lot, so this is a good time to run a campaign on drinking and driving.
–   In summer when people leave on vacation, it might be a good time to run a campaign on driver distraction or fatigue.

Box 36 ■ *Reach of a campaign, interference with other campaigns or actions, and consequences for evaluation*

Certain contextual and structural aspects of the campaign initiator's organisation, such as the area it covers or its relationships with other organisations, can affect the *reach* of the campaign (see *Getting started*, pp. 178-199).

For instance, a campaign could be run at the national level by a national road-safety organisation, while supportive actions could be organised locally by municipal governments and city police. In this case, the local actions can prove helpful in supporting the national campaign; they can help in reaching the right audience at the most opportune places and times.

Of course, the fact that the campaign is being combined with other actions at different scales must be taken into account in the evaluation.

Developing and pre-testing the message and slogans in their full context (pre-production*)*

Developing the message and slogans in their full context

Once the message (content, structure, and style) has been developed, it can be translated into one or more textual and/or visual elements that communicate the message and enable you to set up the campaign according to the chosen media vehicles and media plan. Developing messages and slogans in a way that will convey the core message involves determining the best media and combinations of media such as text, images, sounds, etc. (see Box 37).

Box 37 ■ *Developing the message in its full context: campaign to reduce teenage pedestrian injuries and fatalities[243]*

A British mass-media campaign in 2005 was developed in order to reduce injuries and fatalities among teenage pedestrians between the ages of 11 and 16 (for more on this campaign, see Box 23, pp. 207-208). When developing the message in its full context, the practitioners made use of existing research as well as newly commissioned studies on the target audience.

This research provided insights into the basic causes of teenage road accidents and into teenagers' attitudes toward risk and toward different communications. It also helped in figuring out how to get them involved. Once these insights were pulled together, four issues were identified as important for developing the message:

– Use the powerful influence of friendship groups.
– Tap into the after-school social atmosphere.
– Give teens more insight into what they can do to stay safe on the roads.
– Focus primarily on the dangers of being distracted, since this is a major cause of accidents.

Furthermore, the research suggested that one should not talk to teenagers with the voice of government, and lecturing should be avoided. Accordingly, it was decided to let the teenagers talk to each other, and to use actual teenagers in creating the ad. This would make the ad realistic and engaging, and ensure that the tone was on target for teenagers.

Moreover, it was decided to film the TV spot using mobile phone cameras, since this type of camera is:

– A crucial teenage accessory.
– A highly popular teenage trend.
– A common source of teenage distraction.

Fourteen groups of teenagers were given camera phones and asked to film their everyday interactions. The group chosen to be featured in the ad was the one that came across as the most natural, a group that other teens could relate to. In fact, this group was an actual group of friends filmed on the street in the Stoke Newington area of London, where they walk every day. None of them had previous acting experience. Actors and expert stunts were used to film the crash featured in the ad.

The scenario of the commercial was as follows:

A group of teenagers is enjoying a typical day as they banter and tease one another. They are so distracted that they fail to see a vehicle approaching. One teen walks into the road without looking carefully and is hit by a car. The road crash is seen through the camera phone, together with sights and sounds of shock as the group realizes what has happened. The spot closes with the text: "55 teenagers a week wish they'd given the road their full attention."

A campaign message can be rendered via one or more slogans. Slogans and other text elements must convey the message in the form and style that is most appealing to the target audience. To render a given message, it is recommended that you use a tagline, i.e., a general campaign slogan that will serve as a signature throughout the campaign. Other recommended strategies are to use short and catchy sentences, write body text to create a context for the slogan and/or tagline, and develop scripts for radio and TV spots, etc.

Of course, the way the printed word is used is often defined and limited by the chosen media. For example, an outdoor billboard can only accommodate a slogan and a tagline, whereas there is room in a newspaper ad for body text. As for messages

on variable message signs (VMS), they can only reach the target audience if they are readable by drivers going by, so they should be short and easy to understand.

Message style includes a number of important non-verbal elements that will depend on the type of media used to convey the message:

– Visual elements (typography, use of colour, etc.): in practice, when a campaign relies on a visual medium such as posters, the advertising agency develops a visual concept to convey the message. This concept usually consists of one or more images (drawings, photos, illustrations, logos, graphics, animations, etc.) that best express and support the message.

– Soundscapes: music, tone of voice, etc. (for audiovisual messages).

For this step, the advertising agency designs the actual campaign materials that will deliver the message. The agency will supervise the pre-production and production of the campaign materials, and if necessary, subcontract tasks out to specialized companies.

Pre-testing the message and slogans in their full context

Before actually launching the campaign, it is useful to find out if its strategy works well with the target audience – to see if the campaign material is suited to the target audience or if it needs to be changed or improved. This is achieved by pre-testing the message and slogans in their full context. This type of pre-test is different from pre-testing the message *per se*, since it includes testing all of the campaign's procedures, activities, and materials as they will be implemented in the real campaign.

Pre-testing usually consists of showing one or more sample images (drawings, photos, illustrations, logos, graphics, animations, etc.) that best express and support the message, followed by questions to determine whether the message achieves its purpose (see Box 38).

Box 38 ■ Typical pre-test topics concerning the message in its full context

Typical questions when pre-testing the message include the following:
– What is the main message of the ad?
– What additional messages does the ad convey?
– What do you think they want you to know/ believe/ do?
– What works well/ doesn't work well in the ad?

Finally, you can pre-test the message and audiovisual material using the fully produced advertisements, but this is a very expensive way to proceed. In practice, the material is mostly tested on storyboards (see Box 39).

Box 39 ■ *Pre-testing of the message on storyboards in the Scottish "Foolspeed" campaign: reduce speeding*[146]

> The general objective of the Scottish "Foolspeed" campaign (1999-2001) was to reduce speeding on Scotland's roads[1]. In this campaign, an advertising agency developed creative concepts for the three ads based on the research findings. In order to evaluate the communication potential and obtain guidance on aspects of execution, each ad went through several successive stages of consumer research. At each stage, a series of eight same-sex focus group sessions were conducted.

The focus groups consisted of drivers ages 25-44. Given that the main target group was male drivers in this age group with professional, white-collar, or clerical jobs, drivers with these characteristics were slightly over-represented in the samples. In order to maximise its value, consumer research was carried out at the pre-production stage. The creative concepts, in storyboard form with narration on audio-tape, were presented in the focus groups. The ads were further refined before final production on the basis of the findings from this research

At the end of this step, the creative brief should be updated (see Box 40).

Box 40 ■ *Updated creative brief for a speeding campaign (second update) – updated elements are shown in italics*

- **Problem description:** statistics on accidents due to speeding, data on speeding offences and behaviour (observed and self-reported), types of roads where speeding problems are often seen, types of road users involved, etc., background and probable causes of speeding behaviour (intentional or unintentional, etc.), elements that predict and explain speeding behaviour (based on theoretical models), main predictors of safe behaviour
- **Context of the problem:** speed management and enforcement system, speed limits, fines for speeding, enforcement level, previous measures to counter the problem, possible societal trends that encourage speeding
- **Information from past (evaluated) anti-speeding campaigns**: objectives, target audience(s), theoretical framework used, evaluation results, etc.
- **Target audience(s):** audience(s) most involved in the problem behaviour, for example male drivers ages 20-25, typical motivations, characteristics and behaviours of the target audience, its awareness of the problem, habits, beliefs, perceived risk, etc.
- **General goal of the campaign:** to reduce speeding-related accidents by influencing speeding behaviour of target audience(s)
- ***Specific objectives of the campaign:*** *primary and secondary objectives. For example, to decrease the number of speeding offences in developed areas (primary objective), to increase awareness of the consequences of speeding for vulnerable*

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1   For more information on this campaign, see Boxes 26 (p. 215) and 31 (pp. 229-230), and see also Stead, A., MacKintosh, A. M., Tagg, S., & Eadie, D. (2002). *Changing Speeding Behaviour in Scotland: An Evaluation of the "FOOLSPEED" Campaign*. Centre for Social Marketing, University of Strathclyde, Glasgow, Scotland, Scottish Executive Social Research. Retrieved January 5, 2009, from http://www.scotland.gov.uk/Resource/Doc/46997/0026925.pdf

road users, to change normative beliefs regarding speeding, to increase subjective risk of getting caught (secondary objectives)

- **Campaign stakeholders and partners:** for example, national and local police forces, road victims' associations, local governments, insurance companies (sponsor), etc.
- ***Campaign strategy:*** *use peer groups to influence young male drivers' risk aware-ness and normative beliefs regarding speeding, combine the media campaign with greater enforcement to increase the objective and subjective risk of getting caught*
- ***Campaign message and style:*** *"Cool drivers do not speed", positive emotional rein-forcement of drivers who adhere to speed limits*
- **Media, distribution channels, *and media plan:*** *230* outdoor billboards *along main roads in developed areas (4 weeks), radio spots (2 waves in 4 weeks, on 6 radio stations aimed at young people), flyer distributed through* network of insurance brokers *to their clients in the 20- to 25-year-old age range*
- **Total available budget:** including the budget for evaluation
- **General time frame for the campaign:** for example, October *15* – November *15*

3.2 Designing the campaign evaluation

Development of the evaluation design can be done either in-house by a department working with or for the initiator, or by an outside agency (e.g., research institute or university). The evaluation design should receive no less effort and attention than the design of the campaign itself.

As part of the CAST project, an evaluation tool was developed that can help you determine what measures, methods, and tools to use, depending on the objectives of your campaign. We recommend using this tool to design your evaluation[242].

Furthermore, there are several websites that provide guidance for doing evaluations (see Box 41).

Box 41 ■ Useful links that provide guidance for doing evaluations

If you need help in conducting the evaluation, you might want to consult the following websites:
–   The **European Evaluation Society (EES)** lists the standards and guiding principles of national and regional evaluation societies in Europe and abroad.
www.europeanevaluation.org
–   The **UK Evaluation Society (UKES)** lists a number of online evaluation resources, plus links to other national and regional evaluation societies.
www.evaluation.org.uv
–   The **European Commission**'s Financial Programming and Budget website publishes practical guides for organising, planning, and carrying out evaluation activities at different stages of programmes, activities, and policies on a European scale. This may be of particular interest if your campaign has a European scope.
ec.europa.eu/budget

Defining the objectives of the evaluation and developing evaluation measures

At the very least, your campaign evaluation should tell you whether the campaign works or not, and whether it is cost-effective. More specifically, it should tell you which elements work or do not work, and why or why not. Answering each of these questions involves a different type of evaluation, namely a process evaluation, an outcome evaluation, or an economic evaluation (see *Evaluating campaigns*, pp. 150-168).

In this step, you will define the variables for the evaluations that will take place before and after the campaign, and sometimes also for an evaluation that will be conducted during the campaign. This will involve qualitative and quantitative measures related to the campaign's specific operational objectives.

Process evaluation – measures for evaluating the implementation of the campaign

You should make sure that your campaign has been implemented as planned. This is done via the process evaluation, which involves measuring the implementation of the campaign based on its operational objectives. The process evaluation enables you to monitor what is happening during the campaign itself, and if possible, to make necessary adjustments to your plans. It is also a useful aid when analysing and interpreting the results of your other evaluations. This kind of evaluation can provide explanations in cases where the campaign does not have the expected effects. For example, if the campaign was unsuccessful in achieving its goals, the process evaluation might show that the timing of the message was wrong since it failed to reach its target audience. Of course, there may be other factors that explain why a campaign doesn't work, such as factors related to message content.

Possible variables to use in the process evaluation include objective and subjective exposure, as detailed below.

Objective exposure (see Box 42*):*

■ Types of activities carried out.
■ Total exposure – the total number of people being exposed to the campaign (i.e., number of people listening to the radio programme, number of readers).
■ Number of messages that have been disseminated (number of TV spots, number of advertisements, number of posters displayed, number of leaflets, etc.).
■ Frequency, duration, and timing of messages distributed (for how long was the message displayed or on the air, how long was the poster up, how long was the radio programme, how many times was it broadcasted, etc.).
■ If the campaign is combined with another action, the process evaluation should also focus on that action. For example, if the campaign is combined with enforcement, the process evaluation could specify the number of drivers checked by the police and when and how often the checking was done.

Box 42 ■ *Example of objective exposure measures: the British seatbelt campaign (1998): increase seatbelt wearing in the back seat, particularly among 15 to 30 year olds*[259]

> Over the years, THINK! has run a number of campaigns to promote a key message: always wear a seatbelt. Recent campaigns have targeted young men aged between the ages of 17 and 24 and back-seat passengers, who, research has shown, are more likely to avoid wearing a seatbelt. The campaigns use a mixture of TV, radio, and promotional materials such as posters and leaflets. A key feature over the years has been powerful, graphic TV advertising showing the effects of not wearing a seatbelt in a crash.
>
> For the back-seat seatbelt campaign in the UK, the public relations operation was organised through several third parties. Many of these provided support in the form of donated advertising space or time. The airing of the commercial itself also attracted additional PR coverage.

In addition to the number of paid advertisements, the campaign practitioners tallied up the media coverage, noting which TV channels, radio channels, and newspapers covered the commercial as a news item in itself.

Subjective exposure *(*see Box 43*):*

■ Reach: percentage of road users in the target audience who have noticed some part of the campaign, i.e., who have come in contact with the message.

■ Awareness: percentage of road users in the target audience who are aware of the campaign theme and message, i.e., the seriousness of the problem addressed by the campaign.

■ Recognition and recall: degree to which the target audience remembers the campaign (cued and uncued recall of specific campaign elements, the campaign message, and slogans).

■ Appreciation: likeability of the campaign, opinion/approval of the campaign by the target audience.

■ Message takeaway: people's perception of the gist of the message, in order to verify whether the message is being understood.

Box 43 ■ Example of subjective exposure measures: Scottish Drink Drive Festive Campaign: reduce drinking and driving during the holiday period

The aim of the 2003/2004 Drink Drive Festive Campaign was to reduce drinking and driving among the general driver population in Scotland during the holiday period. One part of the campaign was however specifically designed to target young male drivers between ages 17 and 29. A variety of media were used in the campaign, including the press, posters, radio, and television[260].

The campaign was part of a broader campaign, the "Don't Risk It" drinking-and-driving campaign, which was launched in December 2001 to reduce drunk driving in Scotland.

The goals of the evaluation of the 2003/2004 Drink Drive Festive Campaign were to test awareness and understanding of the campaign by drivers.

The evaluation was done in the form of 1,000 in-home interviews with drivers. The sample was structured to be representative of the Scottish population, but was weighted in favour of male drivers between the ages of 17 and 29.

The survey for the process evaluation covered the following topics:
– Cued and uncued recall of the communication (media formats and the specific content).
– Aided recognition of visuals, i.e., the logos.
– Perceived message(s) associated with the communication.
– Perceived impact of the communication on attitudes and driving behaviour.
The findings from this survey were used to draft recommendations for future campaign development.

Moreover, teamwork should be assessed using a qualitative evaluation. This includes examining the level of cooperation within the campaign team, which can obviously have an impact on the results (e.g., disruptions caused by people leaving), as well as cooperation among partners. The outcome of a campaign is also affected by external factors not related to the campaign, such as media coverage, political changes, other campaigns, etc.

Outcome evaluation – measures for evaluating the effects of the campaign

The effects of the campaign should be evaluated by means of an outcome evaluation. This involves measuring whether or not the campaign's specific objectives have been reached. The variables used to measure the campaign's effects should be directly related to its specific objectives:

- **Primary objectives**: the number or severity of road crashes, the number of offences, the frequency of adopting the unsafe and/or safe behaviour**.**
- **Secondary objectives**: knowledge about the safe behaviour, beliefs favouring the safe behaviour, self-reported behaviour, and behavioural intentions. These variables should be directly related to the theoretical model used to define the objectives. This means they should be directly related to the predictors that have the highest probability of influencing the targeted individuals' knowledge and beliefs, and thus of predicting their behaviour.

These variables tell you if, and to what extent, the campaign reduced or did not reduce the number of road crashes due to the problem behaviour, or led to a decrease in the problem behaviour and/or an increase in the safe behaviour. They also let you measure the effect of the campaign based on self-reported data (knowledge, beliefs, or behaviours), and to explain any changes in overt behaviour or road crashes as a result of the campaign.

When accident reduction is used as a primary objective, the causal relationship between the problem behaviour addressed by the campaign and the type of accident used as a measure should be clearly and unambiguously established on the basis of data gathered in the situation analysis (see *Thoroughly analysing the problem and possible solutions*, pp. 202-206). By using different types of variables (accidents, observed behaviour, and self-reported data), it is possible to establish the link between accidents and the problem behaviour. Although this has rarely been done in the past (Delhomme et al., 1999, p.58)[132], it is definitely recommended. For example, if a campaign addresses driving under the influence, the accident tally should focus on accidents caused by driving under the influence.

The observed behaviours utilised in an outcome evaluation should be directly linked to the campaign's specific objectives (based on the reference model, and on the main predictors of the unsafe behaviour, behavioural change, and/or adoption of the safe behaviour). This means that they should relate directly to the problem behaviour addressed by the campaign relative to the target audience (*see Box 44*). Typical variables will include:

- The places where road crashes occur.
- The types of road users involved in road accidents.

- The frequency of accidents.
- The dates and times of road crashes (times of the day when accidents occur).
- The types of road accidents and severity of consequences (all road crashes, property damage only, accidents involving personal injury, fatal accidents)[132].

If the campaign is combined with another action, the observed behavioural measures should take this activity into account as well.

Box 44 ■ Evaluation of road accidents and observed behaviour in the "Speak Out!" campaign: reduce injuries and fatalities among young people[261]

The campaign appeals to automobile passengers to "Speak Out!" by asking drivers to be more careful at the wheel (for more information on this campaign, see Box 28). The effect of the campaign on the number of people killed or injured in road accidents was evaluated by conducting three types of studies:

a A before-and-after study with a matched comparison group: The matched comparison groups were from the county of Møre og Romsdal and the neighbouring county of Sogn og Fjordane. The two counties are similar in regard to young peoples' car usage. In addition, both counties conducted attitude campaigns built on principles other than those used in "Speak Out!".

b A before-and-after study with a general comparison group: The general comparison group consisted of all other counties in Norway – 18 in all. The advantage of using this as a comparison group was that the number of injuries was great, making random variations small.

c A multivariate analysis (Poisson regression analysis), which measured the effects of factors that influence the number of people injured in road accidents.

It can be difficult to establish that a change in behaviour is due to a campaign or its supportive activities, and not to other factors. Other factors should therefore be acknowledged, for example: other road safety communication campaigns and actions run nationally and/or locally, road-engineering projects, enforcement measures, etc., all of which might influence the outcomes. Obtaining several outcome measures will help increase the reliability of the results and should allow you to overcome this difficulty[262].

Regarding secondary objectives, the measures (variables) should be chosen according to the reference model and, obviously, the campaign's specific objectives, including the main predictors of the problem behaviour and/or the safe behaviour (see Box 45). The main predictors can be factors from the reference model (e.g., *Theory of Planned Behaviour*), *the Transtheoretical Model of Change*, etc. Others might be supplementary factors.

Important factors could include the following:
- Knowledge.
- Beliefs.
- Norms.
- Perceived risk.
- Self-reported behaviour and/or behavioural intentions.

Box 45 ■ Measures of beliefs as outcome variables in the 2003-2004 Festive Drink Drive campaign evaluation

Scottish Executive Social Research carried out the evaluation of the Scottish Festive Drink Drive Campaign in 2004[260] (for more information see Box 43). Variables such as attitudes, perceived consequences of drinking and driving, and appropriateness of penalties were measured for the outcome evaluation of this campaign.

Attitudes:
– It is acceptable to drink alcohol when you are driving as long as it is within the legal limits.
– Drinking alcohol and driving depends on the individual. Some people shouldn't drink at all if they are driving. Other people are able to drink more without it affecting them.
– I would still be able to drive competently after a small amount of alcohol within the acceptable legal limit.
– It would be better not to have anything to drink at all if you are going to drive.
– It is acceptable to drink and drive if you are only going a short distance.

Perceived consequences of drinking and driving, and appropriateness of penalties:
– Being barred from driving.
– Losing your licence.
– Fines.
– Damage to the car.
– Increase in insurance premiums.
– Imprisonment.
– Injure/kill someone.
– Get killed or injured in a crash.

Economic evaluation – measures for evaluating the cost-effectiveness and efficiency of the campaign

Finally, an economic evaluation is conducted to assess the cost-effectiveness and efficiency (cost-benefit analysis) of the campaign, combined (or not) with supportive activities. It allows you to find out whether the campaign results are in keeping with the monetary investment. The economic evaluation involves specifying all resources used, even if the campaign initiator receives these as gifts or voluntary contributions.

To do the cost-effectiveness and cost-benefit analyses of a campaign, you need to gather information on its total cost (development, media placement, supportive activities, evaluation), and on its effects in monetary and non-monetary terms.

The economic evaluation should answer the following questions:

–   How much did the whole campaign cost? This involves calculating the total costs incurred by the campaign, i.e., concept development, production of materials, media, implementation, evaluation, and labour costs (see Box 46).

–   Was the campaign cost-effective? This involves comparing what was spent to the effects of the campaign in non-monetary terms.

–   Was it efficient (cost-benefit analysis)? This involves comparing what was spent to what was gained, in monetary terms.

Box 46 ■ Evaluation of the total cost of a campaign: "Speak Out!" campaign[261]

The "Speak Out!" campaign has been running every year since 1993 (for more information see Box 28, pp. 222-223, and Box 44, p. 248). For this campaign, the estimate of total cost was based on direct costs related to the informational part of the campaign (T-shirts and other informational material, production and distribu-tion of the "Speak Out!" film and DVDs), and labour costs (financial investment for developing and organising the campaign).

The benefits of a campaign, that is, the monetary value of positive effects on road crashes (and/or degree of injury), may be calculated on the basis of changes in behaviour or on the basis of road-accident statistics. For example, for an observed reduction in speeding, the effect on road crashes or injuries can be estimated by using the Power Model (see Box 1, pp. 31-32).

Estimates of the effects of behavioural changes on the (risk of) accidents or injuries can be found in *The Handbook of Road Safety Measures*[224] and other sources. By transforming these estimates into the cost of expected road crashes or injuries using the national or European recommended monetary valuations of avoiding a fatality, severe injury, slight injury, or no-injury accident, you will be able to calculate the benefits of your road safety campaign.

Choosing the evaluation design and sample

In this step, you will choose an evaluation design and define the sample according to the budget, the sample size, and the type and theme of the campaign and its supportive activities. Since this is field research, this choice will require a compromise. For example, if your budget is low, you will not be able to use observed behaviour as a variable, but you might replace it by self-reported behaviour or road-crash data. In all cases, though, you will need to have at least one measurement before and one measurement after the campaign, with control or comparison group(s); otherwise the evaluation will have no validity at all. Moreover, pre-testing the evaluation tools is highly recommended. It is better to have a smaller sample rather than to skip the pre-test, since pre-testing is essential for knowing whether the chosen variables and tools work for the evaluation you plan to do (see *Evaluation design: different designs and their use in isolating campaign effects*, pp. 161-168).

For more information on how to choose the evaluation design and define the groups (experimental and control or comparison), you can refer to the evaluation

tool developed in the CAST project[242]. Moreover, there are some recommended manuals that should help you define the evaluation design and the sample (see Box 47).

Box 47 ■ *Recommended methodology manuals*

- Boulanger A., Daniels S., Delhomme P., Deugnier M., Divjak M., Eyssartier C., Hels T., Synnøve Moan, I., Nathanail T., Orozova-Bekkevold I., Ranucci M.-F., Schepers P., Van den Bossche F., Zabukovec V. (2007). Campaigns and aware-ness-raising strategies in traffic safety. Deliverable 2.2: Comparison of research designs, Belgian Road Safety Institute (IBSR-BIVV), Brussels, Belgium.
- Reis, H., & Judd, C. (eds) (2000). Handbook of research methods in social and personality psychology. New York: Cambridge University Press.
- Robson, C. (1993). Real world research. A resource for social scientists and practitioners-researchers. Oxford UK and Cambridge USA: Blackwell.
- Shadish, W.R., Cook, T.D. In: Campbell, D.T. (2002), Experimental and quasi-experimental designs for generalized causal inference. Boston: Houghton Mifflin Company.
- Shadish, W. R., Cook, T. D., & Leviton, L. C. (1991). Foundations of program evaluation: theories of practice. Newbury Park, CA: Sage.
- Delhomme, P., & Meyer, T (2002). La recherche en psychologie sociale. Projets, méthodes et techniques. Cursus, Armand Colin, Paris.

Using quasi-experimental designs: control or comparison groups

In practice, a true experimental design is seldom used to evaluate a road safety communication campaign because the subjects cannot be randomly assigned to the experimental group (i.e., the group that was exposed to the treatment) or to the control group (i.e., the group that was not exposed). In many cases, then, it is more suitable to compare subjects who were exposed to the campaign with subjects from a presumably similar population that was not exposed, but without having people randomly assigned to either group. In such cases, the term *comparison group* is used to designate the group that is not specifically targeted by a campaign but exposed to it. Take the example of a national campaign in which the target audience is young drivers ages 17 to 19; this is the experimental group, and drivers between the ages of 20 and 26 could serve as a comparison group.

To increase the likelihood that it is the effects of the campaign that are being tested, it is possible to use more than one comparison group, as long as all groups, including the experimental group, are as similar to each other as possible (see Box 48). For example, a campaign might be implemented in one city and the results could be compared to two other cities that are similar to the first one (in terms of population, infrastructure, etc.).

Box 48 ■ Control or comparison group(s) and campaign scale[132]

The choice of design, including the selection of control or comparison group(s), is related to the campaign's scale. Concerning the geographic extent of a campaign, a national campaign might be crossed or combined with local actions, regional actions, etc. Local campaigns might be implemented either on a stand-alone basis or as a supplement to bigger campaigns (national, regional, etc.). If the design used in these campaigns is the same as in the national campaigns, it will be easier to evaluate the larger-scale campaign. In any case, consultation is needed between local agencies and government agencies in charge of the campaign on the national level.

Evaluators should try to find the best compromise between the definition of the target audience and the campaign scale. Of course, the choice of a specific target audience will depend on road-crash statistics, road-safety indicators, etc. However, the conclusions of the evaluation will be more reliable when the campaign addresses a specific target audience.

If the campaign targets a specific audience, a comparison group can be created even if the campaign is nationwide (e.g., if a nationwide campaign targets male drivers ages 50 to 60, the comparison group could be drivers between 30 and 40). However, when a nationwide campaign targets the entire population, it is not possible to have a comparison group, which limits the possibilities for evaluating the campaign's effectiveness.

Another possibility is to use substitutive designs involving repeated measures, such as a time-series analysis (See *How to isolate the effects of a campaign*, pp. 164-165).

Sampling technique

The sample that will be used in the evaluation must be representative of the target audience. Therefore, the sampling technique is an important consideration, because you want to be able to generalise the results obtained from the sample, to the whole population. Consequently, the sample should be located in the same area where the campaign was implemented.

The sampling technique depends on the type of data to be collected and should take different elements into account:
– The size of the sample (see Box 49): the number of observations needed to have a representative image, which depends on finding the right balance between the cost and its degree of representativeness, the statistical power, and the size of the actual target.
– Times, places, and prevalence of the problem behaviour, according to the campaign's specific objectives.

Box 49 ■ Defining the sample size: an example[263]

Sample size can vary enormously. In deciding on the sample size, you need to take into account a number of factors:
– The size of the "population of interest", i.e., the target audience.
– The number of subgroups that you want to analyse.
– The way the information will be used, considering the level of "error" that can be tolerated and the level of accuracy required for drawing clear conclusions.
– Whether or not the information will be used "in public".

The margin of error on survey statistics is calculated to reflect the desired level of confidence, which is set at 95% confidence in most cases. An indication of the statistical margin of error applied to various samples is shown below, at confidence levels of 95% and 90%, respectively.

Maximum Statistical Margin of Error

Sample Size	At 95% confidence	At 90% confidence
60	+12.7%	+10.6%
100	+9.8%	+8.2%
200	+6.9%	+5.8%
300	+5.7%	+4.7%
400	+4.9%	+4.1%
500	+4.4%	+3.7%
600	+4.0%	+3.3%
700	+3.7%	+3.1%
800	+3.5%	+2.9%
900	+3.3%	+2.7%
1000	+3.1%	+2.6%

Let's assume the chosen level of uncertainty is .05. (i.e., the sample represents the entire population being studied, with a confidence interval of 95%) and the population's opinion is divided into two halves. Then, the size of the sample studied varies according to the uncertainty scale.

The formula for calculating the size of a sample is as follows:

$$n = \frac{(1.96^2)N}{(1.96^2)+I^2(N-1)}$$

where:
n = size of the sample
N = size of the population to be studied
I = margin of error (the maximum margin of error for any percentage is the radius of the confidence interval when p = .05)

> Example. Let's use this formula to calculate the size of a sample representative of an actual target of 5,000 individuals. In order to obtain a 6% margin of error (3% error above the value, 3% below), you have to study a sample of 878 individuals.

Sampling techniques for self-reported data

Random sampling, in which each unit has a known and non-zero probability of being chosen at random, allows you to generalise the results to the entire population. In order to have a representative sample, the selection should be based on a full, up-to-date sampling base (e.g., an address list obtained from the authorities, such as a list of driver's licence holders between the ages of 18 and 20). The sample will then be drawn from the list in random fashion [1]. When no base for random drawing is available, you should use empirical sampling. With this type of sampling, the units in the sample are not chosen at random. In this case, the probability that the units in the population belong to the sample is not known; a standard error is possible. Conclusions drawn from an empirical sampling are less generalisable to the entire population than conclusions drawn from a random sampling [2].

Sampling techniques for observed behaviour

To make up the observed-behaviour sample, it is possible to choose the sampling base using the road infrastructure, for example, as a point of reference (e.g., intersections), which must always be connected to the time and place where the problem behaviour is most frequent. From this sampling base, a random set of individuals will be taken from the whole population (empirical sampling). When collecting observations, the areas and periods of observation should be defined very carefully. The evaluator should use sampling techniques whenever it is impossible to collect continuous data on all behaviours. This is especially true for observations of several people at the same time[264]. Several sampling techniques exist for this situation[265].

Sampling techniques for road-accident data

As mentioned earlier, in the case of road-accident data, the data selected should be as specific and detailed as possible. The data should permit geographic segmentation (to take into account the area where the campaign was implemented), time segmentation (the times that road crashes occurred), the type of road users involved, the accident circumstances, and any contributing factors. But be careful – road-crash statistics must be handled with caution.

Defining methods and tools for collecting data

The data-collection conditions and tools must be the same for every phase of the evaluation. Data is usually collected by an outside agency or by a department of the initiator's organisation or one of its partners.

Depending on the type of evaluation and data needed, the appropriate methods and tools will be selected to perform the data collection. The chosen methods

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1   Random sampling techniques include simple random sampling, stratified sampling, and cluster sampling.

2   Empirical sampling techniques include quota sampling, using a random selection of individuals from the whole population according to quotas that match the structure of the population in terms of age, sex, etc.

should balance what is most desirable with what is feasible within the timescale and resources available. The scale of the evaluation should also be proportionate to the size of the campaign.

Methods for gathering data

The typical techniques for gathering qualitative data include interviews (structured, semi-structured or unstructured), focus groups (in-person or online), participant observation, questionnaires with open-ended questions, and document analysis (for example, articles in newspapers). Typical techniques for gathering quantitative data are questionnaires, interviews (telephone or face-to face), observations, and counting systems.

Qualitative data

When using qualitative data, you will need to perform a content analysis. This kind of analysis is much more expensive than quantitative data analysis (see Table 19).

Table 19 ■ *Advantages and disadvantages of the most widely used qualitative techniques (compiled from Sentinella, 2004[262] and Thompson & McClintock, 2000[266])*

Typical techniques for gathering mainly qualitative data	Advantages	Disadvantages and precautions
Structured interviews	■ Structured interviews which use standardised questions can easily be used by several interviewers. ■ Can be used for process evaluation as well as outcome evaluation. ■ Can be paper-based, computer-based, or administered by telephone or in person.	■ Can also be seen as a quantitative method, if open-ended questions are tied to a coding system for answers, and a relatively large number of responses are collected (see Table 20).
Semi-structured or unstructured interviews	■ Semi-structured interviews: standardised questions, but the interviewer can vary the order and phrasing of the questions and probe for more information. ■ Unstructured interviews: the goal is to conduct a relatively natural conversation. Questions and follow-up probes are generated during the interview itself. ■ Interviews may be performed face-to-face or via telephone.	■ Require specific interviewing techniques, using open-ended questions and a topic guide to steer the discussion and ensure that major topics are covered without being too restrictive. ■ Should always be recorded and transcribed verbatim. This makes it easier to analyse the information obtained in the interview. ■ Interviews are rather time-consuming and as a consequence, the size of the sample is usually small.

Typical techniques for gathering mainly qualitative data		Advantages	Disadvantages and precautions
Focus groups	**Focus-group interviews**	■ Questions are asked to groups instead of individuals. Ideally the group comprises 4 to 8 people who are likely to regard each other as equals, as this stimulates the free expression of opinions.	■ A group moderator or facilitator encourages all members of the group to take part in the discussion and maintains the focus of the group. As with semi-structured interviews, a topic guide should be used to ensure that the major topics are covered. ■ As with personal interviews, focus-group interviews should always be recorded and transcribed verbatim. ■ People taking part in the discussion might influence each other. In some instances, one or two people might dominate the others.
	Online focus-group interviews	■ Online focus groups use an internet chat room as the venue for the discussion. This enables people in different locations to take part in the same discussion without travelling to a central location. ■ Online discussion conceals the personal characteristics of the interviewer, thus removing potential interviewer bias. ■ Provides respondents with anonymity, which can be useful when discussing a sensitive topic.	■ Participants can hide details about themselves and present an inaccurate image.
Participant observation		■ Participant observation involves having a member of the evaluation team participate in the activity. This enables viewing the activity from a participant's perspective. It also provides an opportunity to gather informal opinions of the campaign from other participants. The observer keeps a note of his/her experiences and observations of how participants interact with each other. ■ Observation of campaign activities is often used to assess the delivery of the campaign, and is also particularly valuable to the study of behaviour.	■ Participant observers should be unobtrusive and should not affect the running of the campaign.

Quantitative data

Table 20 sums up techniques for collecting quantitative data, which can be either self-reported or observed.

Table 20 ■ Advantages and disadvantages of quantitative techniques (compiled from Sentinella, 2004[262] and Thompson & McClintock, 2000[266])

Typical techniques for gathering mainly quantitative data		Advantages	Disadvantages
Questionnaires		■ Less selection bias since it can be randomized. ■ Highest level of anonymity: therefore, least bias toward socially acceptable responses. ■ Paper-and-pencil or (more and more often) online. ■ Cost per respondent varies with response rate: the higher the response rate, the lower the cost per respondent.	■ Mailed instruments have lowest response rate. The response rate can be increased if reminders are sent out. ■ Dependent on respondent's reading level. ■ Studies using mailed instruments take the most time because such instruments require extra time for mailing back and forth and for completing. ■ Least control over quality of data (so questions that check for inconsistent answers should be included).
Structured Interviews	**Telephone interviews – Computer Assisted Personal Interview (CAPI)**	■ Highest potential to control the quality of the interview: interviewers remain in one place, so supervisors can oversee their work. ■ Easy to select telephone numbers at random. ■ Less expensive than personal interviews. ■ Better response rate than for mailed surveys.	■ Not always easy to get hold of people. ■ More complicated than mailed surveys. ■ Highest level of selection bias: omits homeless people and people without telephones. ■ Less anonymity for respondents than for those completing surveys by themselves. ■ As with personal interviews, requires a trained interviewer. ■ Shorter questions, fewer questions and fewer points on the ranking scale.
	Personal interviews	■ Lowest level of selection bias: can interview people without telephones, even homeless people. ■ Highest response rate: people are more likely to agree to be surveyed when asked face-to-face. ■ Visual materials may be used.	■ Most costly: requires trained interviewers and travel time/cost. ■ Lowest level of anonymity, so responses might not reveal true beliefs; responders may answer according to what they believe is socially acceptable.
Observation		■ Useful for gathering information on behaviour, i.e., seatbelt- or helmet-wearing rate, objective measure of vehicle speed.	■ Not suitable for measuring all types of behaviour (e.g., seatbelt wearing in back seat and aggressive driving, are more difficult to observe)
Counting systems		■ Useful in process evaluation to measure objective exposure to the campaign.	■ Involves keeping written records of all events that are pertinent to the campaign, e.g., number of requests from the public, number of press contacts, etc.

Tools for gathering data

As we have already seen, the effects of the campaign should be tested against its objectives.

Whatever dependent variables you measure when testing the effects of the campaign, the best way is to adapt tools used to evaluate past campaigns on the same theme (e.g., observation grid, interview grid, questionnaire), as long as they have been validated. In most cases, these tools have to be adapted to the specific context of the problem behaviour, the target audience, and the chosen strategy (stand-alone campaign or campaign combined with other actions).

If you collect self-reported data, interview grids or questionnaires allow you to test for changes in the variables chosen on the basis of your hypotheses. To develop data-collection tools, you should refer to the reference model and main predictors of the behaviour that you identified in the situation analysis. You may also refer to the persuasion model used in designing the message.

If there are no available tools, you will need to create your own tools, always based on the same reference model (including the main predictors) identified via the situation analysis.

To increase the validity of the evaluation's conclusion, it is advisable to use more than one type of variable, for example, by combining self-reported data with observed behaviour and/or road-accident data. For instance, if the evaluation concerns a problem behaviour that occurs most frequently at night, possible explanations for the campaign's effect could be found by combining several types of variables (such as speeding tickets issued at night and road crashes occurring at night).

Pre-testing the evaluation, hiring and training investigators

Pre-testing the evaluation allows you to refine the interview guide or questionnaire, the observation grids, and the instructions. The pre-test should be done in the same way as the actual evaluation (including the experimental and comparison conditions). During this step, an initial processing of the data collected (pre-test data and crash data) is done to determine how to analyse the data during the next steps in the actual evaluation.

The results of the pre-tests will enable you to improve the evaluation tools, instructions, type of data analysis to use, etc. They will allow you to check whether you will have enough data to draw clear conclusions.

Utmost care should be taken with pre-testing, because once the evaluation tools have been developed, the same tools must be used for the before-, during-, and after-period measurements, for both the experimental and comparison conditions. These tools cannot be modified after the launch of the actual evaluation, that is, once the before-campaign period has begun.

The procedures for collecting data based on the specific objectives of the campaign are key elements of the evaluation design. Failing to follow these procedures will

have a serious impact on the results. Therefore, you should carefully train any observers, investigators, and/or experimenters. Training should cover how to use the materials and tools (e.g., chart or grid to observe behaviours) and how to follow the data-collection procedures, including recruiting participants according to the type of population studied (target audience), the sampling technique (e.g., meeting the quotas set for the target audience), the observation sites (place, time, etc.), and so on.

To improve the training, you should provide trainees with detailed written instructions. Detailed instructions are especially important when there is more than one investigator, to ensure that the evaluation is carried out in the same rigorous way by all parties.

Moreover, if for some reason you decide not to hire the same investigators as those used for pre-testing the message, you must train the new ones for data collection.

The length of the training period will depend on the staff's level of familiarity with the tasks they have to perform, the use of the materials, and the quality of the evaluation tools. The training period may be longer when the tools are complex (driving simulator, camera, tape recorder, "mobile surveying" on a *Personal Digital Assistant*, etc.**)** (see Box 50)**.**

Box 50 ■ Training the investigators: procedure and materials for collecting data[1]

Every investigator is given a procedure manual that explains how data should be collected. The procedure is fixed and very strict, and involves:
– Defining the number of observation sites where data will be collected, usually sites that are geographically close together.
– Defining the total number of investigators and how many investigators will be at each site (investigators are spread out across the different sites).
– Defining the observation scale, keeping in mind that data should be comparable.
– Handing out the reference manual to the investigators and explaining how to collect the data.
– Supplying a personal digital assistant (PDA) to the investigators and training them in how to use it[267]. PDAs are electronic tools (small personal computers designed to collect data) that have been validated via a validation study. They offer several advantages over paper and pencil, namely:
■ Investigators can carry them in their bags.
■ They can communicate with evaluators (researchers, outside agencies).
■ They can send data directly by e-mail so the data need not be hand-keyed into a computer from paper questionnaires.
■ They can access the evaluators' website and transfer data to the website.
■ PDAs are not damaged in wet weather.

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1   Adapted from the interview of David W. Eby and Jonathon M. Vivoda from the Social and Behavioural Analysis Division of the University of Michigan Transportation Research Institute, USA, February 15, 2007.

Planning the evaluation

Planning the evaluation consists of defining the times and durations of the different evaluation periods, according to the type of data to be collected. The question is: When is the best time to evaluate the campaign?

The effect of a campaign should always be measured in reference to a *baseline* (the pre-campaign or before-period evaluation). The baseline represents the existing level of knowledge, beliefs, behaviours (unsafe behaviour and/or safe behaviour) prior to campaign implementation. The amount of change after the campaign (after-period evaluation) is the difference between the before- and after-period measurements.

Before period

The length of the before-period phase of the evaluation, as well as the time between the before period and the campaign's launch, will depend on the type of data to be collected.

Gathering data on observed behaviours takes more time than gathering self-reported data. It is thus important to plan for an optimum interval of time between the beginning of the campaign and the end of the evaluation's first phase. This time interval should not be so short as to cause data contamination, nor so long that there is interference from other factors not related to the campaign itself (in such cases, the campaign would not be the only causal factor in variable changes).

When relying on self-reported data, it is advisable to begin the before period a few weeks before the campaign is launched, that is to say, anywhere from two or three weeks up to three months ahead of the launch, in order to ensure that the targeted population has not heard about the campaign in the media. On the other hand, when using observations as a data collection method, more time will be needed to ensure observation stability. Thus, in certain cases, the before period will begin as early as six months before the campaign launch, in order to build in sufficient time for carrying out the observations (at least two months). Finally, when relying on crash data, the data should be compiled for a period of at least five years before the campaign to ensure reliability and stability.

During period(s)

The length of the evaluation phase that takes place during the campaign depends on the length of the campaign itself and the type of data to be collected.

For self-reported data, the during period of the evaluation can start a few days to a few weeks after the launching of the campaign, to ensure that the target audience has been exposed to the campaign in the media. The during-period evaluation generally begins after the peak period of the campaign, i.e., after the period when the campaign frequency is at its highest. It can also begin before the peak if several during-campaign evaluations are to be conducted. It is essential not to limit yourself to evaluating only awareness or likeability (which are measured in the process evaluation). The data from the during-period evaluation(s) will always be compared to the data collected in the before period. Consequently, you should determine the measurement periods with great care.

By nature, a during-period evaluation has a number of limitations. For example, it is difficult to draw conclusions from road-accident data collected for the during period, since road crashes are rare events; indeed, the lower the numbers, the lesser the statistical significance. Moreover, it might be particularly difficult to test the campaign's effect over a short period.

After period(s)

The starting date and length of the after-period evaluation(s) must be carefully defined. The effect(s) induced by the campaign (e.g., reducing the number of road crashes, adopting a safe behaviour) usually start decreasing as soon as the campaign has ended. Thus, the after-period evaluation can start as early as the day after the campaign is over, which is the point at which the campaign is supposed to have reached its full effect.

The length of the after period also depends on the type of data to be collected (self-reported data, behavioural observations, road-accident data). For observational data, the data collection will take more time because, to be stable, observations must be made over a fairly long period (a few weeks, for example). It is also important that the observations be carried out under the same conditions as the before-period study. For self-reported data, the after-period evaluation will last a few days at the most.

When possible, it is a good idea to plan several after-period evaluations, because this allows you to evaluate the effect of the campaign over the middle and long terms, that is to say, immediately after, several weeks/months after, and more than one year after the end of the campaign. However, since the effect(s) usually decline when the campaign is over, results from a long-term evaluation might show that the long-term effect of the campaign is negligible.

To review the length of the evaluation periods according to the type of data to collect, you can refer to the table below (see Table 21).

Table 21 ■ Timing of before-, during-, and after-period evaluations on experimental and control or comparison groups

Type of data	BEFORE campaign							DURING campaign	AFTER campaign				
	Years	Months							Months				
	-6	-5	-4	-3	-2	-1		0	1	2	3	4	5
Self-reported data													
Observed behaviour													
Road-crash data	5 years or more												

Note: Durations are expressed with respect to the campaign period. Shaded areas represent periods when that type of data can be used.

Concluding recommendations

To design the campaign and the evaluation, you should take the following steps.

Developing the campaign strategy

The campaign strategy should be based on its specific objectives, which define how to achieve the campaign's general goal in a more operational way. The campaign strategy will determine how you will influence the target audience in order to change or instil knowledge, beliefs and/or behaviour, and will be based on theoretical models.

■ *Define the strategy*. This includes the type of campaign (communication campaign, combined campaign, integrated campaign) and its scale (local, regional and/or national), depending on the areas where the problem occurs, the target audience, and how it can be reached. You should also study past campaigns and actions to obtain guidelines for developing the strategy. Once the campaign strategy is defined, the creative brief should be updated by adding new components.

■ *Develop the content of the message*. This includes the context, structure and style of the message as outlined in the creative brief. This involves establishing a clear procedure and discussions with the advertising agency and the campaign initiator. The message should be as concrete and understandable as possible. You should rely on a social-marketing strategy and consider the specific objectives of the campaign, the characteristics of the problem and/or safe behaviour and its main predictors for the target audience (frequency and place), the perceived benefits and costs of adopting the safe behaviour, the place and time where the safe behaviour should be adopted, the target audience's characteristics, environmental factors, and the sender's characteristics. To develop the message's content and execution strategy, qualitative studies such as individual interviews, focus groups, or creative brainstorm sessions can be used.

■ *Choose campaign identifiers* (mascots, brands, logos, and spokespersons).

■ *Select the media and define the media plan*. The media plan should be set up according to the campaign budget, timing and length of the campaign, advertising rates of each media and vehicle, demographic statistics of coverage, and openings (times and places where the target audience can be reached most easily).

■ *Develop and pre-test the messages and slogans in their full context.* Message testing tells you more about the strengths and weaknesses of the message, and about whether it is able to target the selected audience Tools may exist (e.g., the Risk Behaviour Diagnosis Scale) that can aid you in improving and optimising the message before actual campaign implementation.

Designing the campaign evaluation

The evaluation should be designed with as much care as the campaign itself. To do so, you should:

■ *Define the objectives of the evaluation*. Your campaign evaluation should, at minimum, allow you to determine if it works or not, and whether or not it is cost-effective. More specifically, it should also tell you what aspects of the campaign

work or don't work, and why or why not. Each of these objectives corresponds to a different type of evaluation – a process, outcome, or economic evaluation.

■ *Choose the evaluation design and sample*. You should choose an appropriate evaluation design with at least a before-period and an after-period measurement and a control or comparison group. Choose the sample to fit the time schedule, budget, target-audience size, type and theme of the campaign, and any supportive activities.

■ *Develop evaluation measures* (road-accident data, observed behaviours, self-reported data, and cost data).

■ *Define methods and tools for collecting data*. Select the methods (qualitative or quantitative) and tools needed for the evaluation, considering their feasibility, time required, and available resources. Moreover, pre-testing of the evaluation tools is highly recommended. Data collection should be carried out in the same way for every phase.

■ *Plan the evaluation*. Set up your evaluation according to the type of data to be collected.

Conducting the Before-Period Evaluation and Implementing the Campaign

It is now time to carry out the before-period evaluation, prior to launching of the campaign (which may or not be combined with other supportive activities). The before period should be used as a baseline measurement for the other phases of the evaluation. You also need to produce the actual campaign materials and launch the campaign. Of course, the campaign's progress should be monitored carefully in order to deal with any problems that may arise during the campaign. These sub-steps are presented and illustrated with a diagram (see Diagram 5).

Diagram 5 ■ *Sub-steps for conducting the before-period evaluation and implementing the campaign*

4.1	**Conducting the before-period evaluation**
4.2	**Producing the campaign materials**
4.3	**Implementing the campaign**
4.4	**Controlling the release of campaign materials and possible feedback on previous steps**
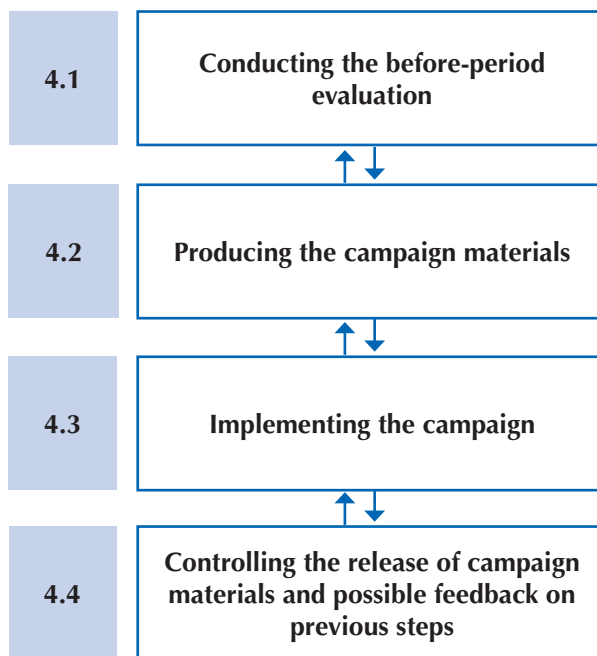
4.1 Conducting the before-period evaluation

The evaluation may be conducted by a department of the initiator's organisation, or by a campaign partner. Generally, it is done by an outside party, a research institute, or a university. A participating university may subcontract with a polling institute for the actual data collection. Working with an outside agency can be advantageous in the sense that the evaluator is more detached from the campaign itself and therefore less likely to be biased or vulnerable to charges of bias. After the evaluation is prepared, it will be launched and then carried out.

Practical preparations for the evaluation

At this stage, you have designed the evaluation, pre-tested the necessary tools, and refined them in accordance with the results of the pre-test. You have hired and trained the investigators and observers during the pre-test. Now it is time to carry out the actual evaluation: this means checking the evaluation material and hiring other investigators if needed. In the latter case, whether the evaluation is to involve observed or self-reported data, you must train the investigators for data collection, which includes learning how to use the materials and tools and how to follow the procedures.

The materials should be prepared and checked against the chosen evaluation design and the variables used to test the effect of the campaign. You should anticipate any problems that could conceivably occur, and build in a margin of error concerning the time and budget set aside for the evaluation. For example, it is better to order more materials than necessary, depending on the budget, to make up for any unexpected events.

Launching and carrying out the evaluation

The evaluation procedure must be identical for every condition evaluated (e.g., media only, supportive activities only, media and supportive activities combined, no campaign). In other words, it must be identical for each group of participants, i.e., for both the experimental and control or comparison groups. Whenever observations are used there is a risk of bias because after the campaign, the investigator might be more attentive to behaviours that conform to his/her expectations. A good strategy to adopt, if possible, is the simple- or double-blind test, which consists of not letting the experimenter or investigator know where the campaign was and was not implemented.

The polling agency will select the participants and make the necessary appointments. These tasks should be done carefully, particularly if the evaluation requires complex testing procedures such as the use of a driving simulator, or if it includes a qualitative section involving interviews or the like.

The before-period evaluation must, in any case, be completed before the campaign itself is launched. So, the time needed to carry out this phase should be figured into the schedule.

Quality control of the before-period evaluation

The actual evaluation process should be monitored and quality-controlled. This means that you should check to see whether the evaluation is being conducted as planned. This will enable you to make a rigorous analysis of the results and to draw relevant conclusions. Spending money on quality control is worthwhile because it increases the validity of the conclusions.

Quality control can be performed by the campaign initiator or by the evaluator. When done by an outside organisation, you should request a quality-control report, including, for example, the original questionnaire forms that were filled out during the evaluation. If you do not have the requisite knowledge in-house to perform the quality control, it is advisable to cooperate with a campaign partner or a researcher for this task.

4.2 Producing the campaign materials

Production of the materials

As mentioned in Step 1 (pp. 179-200), production agencies are hired based on their responses to the call for bids or request for proposals, either for a single campaign or a set of campaigns.

Who handles the production of materials

In general, the material will be produced by one or more outside vendors, or occasionally by the campaign initiator and/or one of the campaign partners. As mentioned in Step 1 (pp. 179-200), the outside production agencies may be subcontractors to the advertising agency, or the campaign initiator may contract with such agencies directly.

Steps in the production of materials

The actual production of campaign materials will involve the following steps:

Specifications for campaign materials

The material specifications must include the number of copies of each kind of material to be produced (number of billboards or flyers, etc.). It should state the quality of the medium (type of paper stock for printed materials, quality of audio-visual recording/editing, etc.), finished size of printed materials, length of broadcast advertisements (TV or radio spots), any other technical specifications, and deadlines for completion (usually corresponding to those included in the call for bids or RFP). These elements should be specified in an appendix to the purchase order or contract, which is signed to finalize a detailed agreement.

Pre-production phase

The production agency should handle the steps needed to produce a sample of the material (e.g., printed proofs for a brochure, test pages for a website). The proof or sample will be submitted to the advertising agency and/or the campaign initiator for one last approval before final production of the material in the required quantities is started.

Production phase

Production is carried out by the production agency and consists of printing and producing audiovisual material and/or digital materials. Quality control is necessary here and includes supervising production, ensuring that the task is performed correctly as per the initiator's request, and making sure that deadlines are met. An initial quality-control check should be performed by the production agency, followed by a second check by the campaign initiator and/or the advertising agency (in those instances where production is subcontracted).

Post-production phase

To improve campaign materials, feedback should be provided on what was actually done. If quality-control checks reveal that the material is not in full compliance with

your requirements, errors should be reported and the material should be corrected if possible. However, in some cases, making corrections at this stage involves substantial added costs. If so, you should negotiate with the production agency to see if they will absorb the cost of making changes, depending on their responsibility in the matter. In any case, it is not possible for the initiator to go over the predetermined budget, since supplementary funding can rarely be obtained. Another difficulty that can arise is a timing problem – sometimes the materials are not ready at the time the campaign was planned to be launched.

Approval of the produced materials by

Once the materials have been produced, proofs and samples are submitted to the campaign initiator for final inspection and approval. In many cases, this step involves signing a final approval document. The campaign initiator should inform all campaign partners, especially those concerned with the production of materials (such as mediators), on the progress of production and on the availability of materials as soon as production is complete.

Media booking

For media booking, the campaign initiator usually relies on a media-buying agency. Most of the time, the media-buying agency is not contracted directly by the initiator but by the advertising agency. The latter acts as an intermediary between the media agency and the campaign initiator.

Advertising space should be bought in newspapers, TV, radio, websites, etc. The media buying is done according to the media plan developed when the campaign was designed.

Some media space/time must be booked well in advance; timing varies according to the country, the media type, and the media vehicle.

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4.3 Implementing the campaign

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Launching the campaign

The moment when the campaign is launched is probably the most important point in the entire campaign, since it creates major, unique opportunities to bring the campaign to the attention of the target audience.

Generally, the launching of a campaign takes place on a single day, even though the campaign may last for several months. Announcing the campaign on its very first day is effective because it attracts media attention and thus indirectly gets the audience to notice the campaign. However, there is no single ideal length for the launching period, and some campaign practitioners prefer to plan for a longer period, for example, a few days.

As a rule, all campaign partners should be involved in the launch. If the authorities responsible for road safety are not involved, either as an initiator or a partner of the campaign, they should at least be informed about the launch.

The launch must be carefully prepared in advance and in great detail. The money used to launch the campaign will depend on its scale (i.e., local, regional, national, etc.) and should be included in the overall budget.

You may contract with a public-relations agency (chosen from among the bidders who responded to the RFP) to be in charge of the launch and enhance media coverage of the campaign.

Earned media and free publicity

Free publicity contributes to the success of a campaign; it magnifies the effect of the paid-media portion of the campaign because it increases audience awareness. Utilizing earned media can be very helpful, especially when working with a small budget. Media coverage in newspaper articles, on TV, and/or on radio broadcasts and interviews creates the necessary "rumour around the brand", which raises people's awareness. Then, when the target audience is exposed to actual campaign elements, they will already have a first impression of the campaign in mind and will be more likely to take in the message. However, the fact of being free also means that the content of the coverage cannot be controlled by the campaign team; there is always a risk that free media coverage might lessen the desired effect rather than strengthen it. A way to avoid this problem is discussed below.

Building a long-term relationship with the media

Having a good relationship with the media is a prerequisite (though not a guarantee) of obtaining positive media coverage.

This rapport must be carefully built over the long term and should operate as an exchange, or dialogue, between the media and your organisation. In other words,

you should structure your interactions with the media so that they come to you to get information on initiatives that are scheduled or in progress.

Establishing media lists

Contacting the press requires having up-to-date fact sheets on all media entities. A media list should be created that categorises them by type of media, the area they cover, the kind of news they provide, their scale, and their target audience, etc. (e.g., regional media, TV channel dedicated to youngsters).

The media list should specify addresses and contact persons, including their e-mail addresses (the most common and easiest way of contacting the press). Contact details can be found in specialized media directories. Some media have appointed editors or journalists specifically for road-safety issues; these should be your prime contact persons.

Choosing press channels

The general press should be informed about the launching of your campaign in order to ensure widespread publicity. In addition, you should involve media that are explicitly geared towards your target audience.

How to contact/inform the media

Messages from a known, reliable source are read with more attention by journalists and editors; this increases their chances of being publicized. That is why journalists and editors should know what your organisation stands for and what its activities are. To this end, you should establish the profile of your organisation as an active and reliable source of information (see above).

Communicating in an organised way

Communicating in an organised fashion with the press enhances the likelihood of getting your news publicized. This involves:

- Being timely (informing the press at the proper time when there is news, neither too early nor too late)
- Being very accurate (giving clear, truthful, and correct information)
- Being complete (including all available information, not partial information)
- Using the appropriate communication method (using e-mail rather than fax or letter)
- Addressing the right people (e.g., general news desks, journalists specialising in road safety)

Choosing a means of communication

Choosing the means to use for communicating with the media should depend on the:

- Quantity of news
- Nature of the news
- Importance of the news
- Urgency of the news
- Budget allocated for press relations
- Available time to be spent on press relations

Whatever the means chosen to address the media, the deadlines of journalists and media should be taken into account.

The three main ways of informing the press are press releases, press conferences, and media events.

Press releases

The beginning of each campaign should be announced with a press release. This serves to catch people's attention and alert them to the campaign theme. Announcing the campaign on its starting date is highly important for enforcement, for example, because such an announcement increases the subjective risk of getting caught, which can affect behavioural change. This technique is known as "announced enforcement" or "publicized enforcement".

Press releases are very effective for providing quick information on new develop-ments and for immediate news that must get into the media as promptly as possible. Moreover, they are easy and economical to prepare.

A press release should contain enough facts to build a story. However, it should still be concise (one or two pages maximum), which does not permit large quantities of information.

For guidelines on how to write a press release, you can check out general manuals on public relations or search for special publications on the topic (see Box 51).

Box 51 ■ Writing a press release: some manuals on public relations

General manuals on public relations and other special publications can give you guidelines on preparing a press release.
–   Bartram, P. (2006). How to write the perfect press release: real-life advice from editors on getting your story in the media. Brighton: New Venture Publishing
–   Fletcher, P. (2004). An editor's guide to perfect press releases: the key to free publicity for your organisation or business. S.l.: BookSurge Publishing
–   Loeffler, R.H. (1993). A Guide to preparing cost-effective press releases. Binghamton: Haworth Press
–   McIntyre, C.V. (1992). Writing effective news releases: how to get free publicity for yourself, your business, or your organisation. Colorado Springs: Piccadilly Books

Press conferences

Press conferences are a good way to announce news that can be planned in advance. They can provide large quantities of information, they allow more direct contact with journalists, and they are interactive, allowing you to answer the jour-nalists' questions.

However, press conferences are costly to stage and time-consuming for journalists. Consequently, the news value must be sufficient to motivate journalists to attend.

You can organise a press conference jointly with other campaign partners (e.g., road or transportation authorities, police, sponsors) and/or incorporate contributions from other participants (e.g., crash victims who tell of their own experience and give advice).

Spokesperson(s) may also be chosen according to their celebrity. When a government representative or other well-known person announces the campaign, this will increase media attention. The spokesperson(s) will be more effective if they create higher awareness of the campaign theme. For example, a race-car driver might be asked to announce an anti-speeding campaign with a message such as "If you want to speed, go to a racetrack, don't speed on the road!" However, using celebrities as spokespersons also involves some risks (see *Spokespersons*, pp. 230-231).

If enforcement is a key element of the campaign, or if the campaign is aimed at informing people about a new law, the police should be involved in the campaign launch, including in any press conferences.

Preparing for a press conference takes time and careful attention (*see* Box 52). The organisation of the press conference can be carried out in-house by experienced people, or by an external public-relations agency or consultant hired to do all or part of the work.

The first and most important step is to determine the date, place, content, and programme for the conference (time, speakers, and topics), while being aware that a press conference should not run too long (one hour is the absolute maximum). Moreover, you should choose only relevant speakers, allow time for questions, and provide background material in a complete press kit.

Box 52 ■ Some guidelines for organising a press conference

There are essential guidelines that should be followed when putting on a press conference:
–   The press conference should be scheduled at the most opportune time, taking into account the news deadlines. In most countries, mid- or late morning on weekdays is the best time, although this can vary from country to country.
–   Choose a suitable place: central, accessible, with sufficient space, in pleasant surroundings, and if possible, with some connection to the topic.
–   Send invitations to the press well enough in advance (one week ahead of time is ideal), using your media list. Make sure the invitation is clear (mention the topic, time, place, etc.) and attractive (style and graphics).
–   Carefully plan the logistics with a team of collaborators (reservation of the conference room, technical equipment, production of press kits, contacting speakers, catering).
–   Evaluate the press conference. You can do this in a debriefing meeting with all participants, during which all positive and negative points should be discussed. This will provide valuable information for future reference.

Press conferences are usually supported by press kits. A press kit is ideal for giving background information on a topic and/or for situating the topic in its broader context. It may contain fact sheets, statistics, abstracts or overviews, history, pictures, etc. It must be put together with great care: preparing a good press kit requires time and logistical support.

Press conferences can be supplemented with interviews, which enable campaign representatives to express an opinion, a view, or a core message in a short time. Interviews should take place in a suitable location and should be thoroughly prepared.

For more information on organising press conferences and handling press contacts, you can refer to general manuals on public relations, or search for special publications on the subject (e.g., Byrne, 2002)[268].

Media events

Media events (e.g., happenings, stunts) can focus the media's attention on the campaign and stimulate broad media coverage. Media events are usually big attention-getters. They provide a venue to communicate the issue of the campaign and contribute to propagating a better understanding of the problem.

For instance, for a drinking-and-driving campaign, you might put journalists in a simulated drinking-and-driving situation to help them appreciate the problem. For this purpose, you could use a special driving simulator[1] to mimic the visual perception of a drunken person. For a seatbelt campaign, you could organise a live crash test for journalists so that they can witness the difference between what happens to crash-test dummies with and without a seatbelt.

Media events can be combined with a press release or press conference in order to provide all the necessary background information.

As with a press conference, preparing and setting up a media event is usually time-consuming and expensive. It requires great care, professional planning, and attention to logistics. Therefore, it is advantageous to contract with a specialised PR agency for this task.

When to announce the campaign

The announcement of the campaign must be carefully planned, taking into account other major news events that are scheduled to come out beforehand. Indeed, the chances of getting published is smaller when other important news events occur. Obviously, however, urgent news interfering with the campaign cannot be foreseen.

It is generally preferable not to announce events on Fridays, Saturdays, or a few days before a public holiday, unless the campaign theme is linked to that particular period (e.g., prompting people to be careful on holiday trips), because the likelihood of getting news published on those days is smaller. However, this may vary

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1   For example, visit www.top-25.eu, an NGO that organises driving simulator events at no cost.

from country to country; journalist associations can inform you of the most opportune times to communicate with the media.

Press conferences and press releases usually take place on, or within a few days of, the campaign's starting date.

Generally, the end of a campaign is not announced, so when a campaign is effective, its positive effect(s) can outlast the campaign itself. However, a press release could be issued to announce that the campaign will be back next year, or to provide information to the media on the campaign's outcome.

Evaluation of press coverage

Evaluating media coverage is useful for improving your internal and external communication and your future press contacts, and also for providing positive feedback to sponsors and campaign partners. All media stories about the campaign should be carefully collected and inventoried, not only for future reference but also for the process evaluation.

Release of campaign materials

Generally, the advertising agency takes care of coordinating the release of campaign materials. The campaign initiator should keep an eye on this task.

To implement the campaign, you should closely follow the schedule set up at the time of campaign design. All mediators and partners should be informed about the exact timing of the campaign and any potential supportive activities.

In cases where the campaign is combined with other actions or programmes, it is essential to coordinate all the activities carefully, while making sure that each component is implemented as scheduled and that deadlines are respected. This requires very strict organisation and good communication on the part of the initiator to the campaign partners and mediators.

The campaign materials should be sent to the media well in advance to allow for insertion in the chosen distribution network(s) (e.g., outdoor advertising networks for billboard posters, TV and radio networks for TV and radio spots, various mediators for brochures).

Not all campaign materials are necessarily implemented simultaneously. Some materials and activities may be implemented later than others and at different times, according to the campaign strategy and media schedule (e.g., the distribution of giveaways may start two weeks after billboard posting).

4.4 Controlling the release of campaign materials and possible feedback on previous steps

The advertising agency takes care of controlling the release of the campaign materials when it is directly in touch with the media-buying agency. In cases where the campaign is combined with other actions, controlling implementation will require more involvement from the initiator and/or the campaign partners (e.g., the police when the campaign is combined with enforcement).

Launching the campaign and releasing the campaign materials marks the beginning of the process evaluation, which is the verification tool that will assess whether the campaign has been implemented as planned, whether the target audience has been reached, and to what extent. Its purpose is to shed light on the results of the outcome evaluation.

However, if initial feedback from the process evaluation shows that the campaign has not been implemented as planned – if they indicate that subjective exposure rates are below the expected ones – you can use these preliminary results to solve the problem while the campaign is still running (for example, by increasing the frequency of TV spots).

If there are problems with the campaign's implementation, you can negotiate corrective measures with the advertising agency and/or the media-buying agency. A good agency will follow the campaign on a day-to-day basis and will proactively propose emergency measures if needed. Sometimes extra advertising can be negotiated at very little or no cost if it is clear that the initial targets of the media planners were not met. However, the probability that problems will occur with the implementation of the campaign is lower when the pre-test was done carefully before the campaign was launched, even if technical, timing, or logistical problems were not avoided.

Concluding recommendations

To implement the before-period evaluation and the campaign itself, you should take the following steps:

Conducting the before-period evaluation

The before-period evaluation should be conducted according to its objectives and the chosen evaluation method. This involves checking the evaluation tools and materials, and hiring and training the investigators. The evaluation procedure must be identical for every condition implemented, i.e., you should implement the same procedure for each group of participants (experimental, control, or comparison groups).

Producing the campaign materials

The outside agencies you have hired should produce the campaign materials and book the media space in order to be ready when the campaign is launched.

Implementing the campaign

The timing of the launch is very important since it creates unique opportunities to get free publicity for the campaign. In cases where the campaign is combined with other actions, careful coordination of all activities is important to make sure that each component is implemented as scheduled. This requires very strict organisation and good communication between the initiator and the campaign partners and mediators.

Controlling the release of campaign materials and possible feedback on previous steps

You should use the initial feedback from the process evaluation to determine whether the campaign has been implemented as planned, and whether and to what extent the target audience is being reached. This requires strict coordination and follow-up. If the preliminary feedback indicates problems with the implementation of the campaign, it may be possible to correct the problem while the campaign is still running. Moreover, you might be able to negotiate corrective measures with the advertising agency and/or the media-buying agency. In cases where the campaign is supplemented by other actions, controlling the implementation will require more involvement on the part of the initiator and/or the campaign partners.

Completing the Evaluation and Drawing Conclusions

In order to determine whether the campaign you have launched was effective, you need to complete the campaign evaluation with a comparison of measurements taken before and after the campaign. We also recommend doing a measurement during the running of the campaign. Your analysis of the data collected at these times will tell you if the campaign had any effect(s), and on what dimension(s). Regardless of whether there were any effects, the results must be reported. The evaluation must be done independently and it should not be subject to any type of bias or influence. The evaluation committee should safeguard the objectivity of the evaluation, although impartiality can never be absolutely guaranteed.

These sub-steps are depicted in the diagram below (see Diagram 6).

Diagram 6 ■ *Sub-steps in evaluating a campaign and drawing conclusions*

5.1	**Implementing the chosen method for the during- and/or after-period evaluations**
5.2	**Processing and analysing the evaluation data**
5.3	**Gathering cost and cost-effectiveness information**
5.4	**Drawing clear conclusions about the campaign**
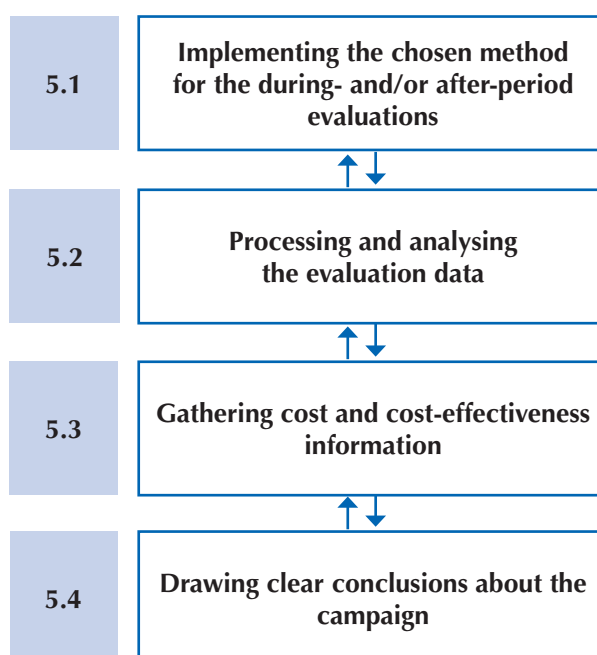
5.1 Implementing the chosen method for the during- and/or after-period evaluations

At this moment, the method and time schedule for the evaluation have already been defined. Therefore, you should know if you have decided on a during- and/or after-period evaluation in the short term, mid term, and/or long term. Moreover, the research design and the sampling method have already been defined and pre-tested.

You should be aware that once the budget is set, it is difficult, if not impossible, to add an additional evaluation period, such as a during-campaign period or another after-campaign period.

If possible, while the evaluation is being conducted, you should check for possible sources of interference that could influence the results. This task includes checking whether any other road safety communication campaigns or actions (e.g., a new law) have taken place, or any event (e.g., a major road accident) has attracted media attention during your campaign or in the area where control and/or comparison group(s) were selected. However, there is no such thing as an "influence-free" period – there will always be events that might have a bearing on the outcome.

When you established the campaign evaluation plan, you defined the lengths of the during and after periods of the campaign. When the types of data to be collected are the same for the three evaluation periods, the conditions of data collection and the tools for collecting the data (e.g., questionnaire) should also be exactly the same in each phase.

Continuing with the evaluation

Before launching the evaluation, you must check that it will be performed in an identical way (same instructions, same tools, etc.) in all experimental and comparison condition(s), and that it covers the same experimental or control areas, as defined in advance.

During-period evaluation

If the campaign was well prepared and pre-tested, the majority of the target audience should be aware that the campaign is in progress and know its theme and message.

If initial feedback from the process evaluation shows that only a small proportion of the target audience is aware of the campaign, it's advisable to wait a few days so that the target audience will have more exposure to the campaign.

After-period evaluation

You should keep to the schedule, scope, and scale previously defined for the after period. Moreover, you must use the same tools as the ones employed for the other periods.

Controlling evaluation quality

Just as with the before period, you should ensure that the evaluation is implemented as planned for the during- and after-campaign periods. The quality of the evaluation can be monitored by an outside evaluating committee (see *Conducting the before-period evaluation and implementing the campaign,* pp. 265-278).

5.2　Processing and analysing the evaluation data

The data processing and analysis for the outcome evaluation may be performed by researchers. For the process evaluation, this task can be done by the polling institute or advertising agency. In all cases, the campaign initiator's role is to supervise all aspects and phases of the evaluation.

At this stage, you should try to isolate the effects of the campaign according to the hypotheses you formulated regarding its primary and/or secondary objectives, and according to the chosen evaluation variables. In other words, you should test to see if the campaign – with or without additional supportive activities – has reached the predefined primary and secondary objectives regarding:

– The number or severity of road crashes, number of offences, the frequency of adopting the unsafe and/or safe behaviour (primary objectives).

– Knowledge and beliefs about the problem behaviour and the safe behaviour, subjective risk of getting caught, self-reported behaviour (secondary objectives).

To isolate the effects, you should compare the results from the before period with those from the during and/or after periods, in each of the experimental and control or comparison conditions.

Process evaluation

As previously discussed (see *Process evaluation,* pp. 154-156 and pp. 245-247), the process evaluation measures whether the campaign is working as planned. It measures the campaign's dissemination and its perception by the target audience, namely, its objective exposure (see Box 42, pp. 245-246, and Box 53) and subjective exposure (see Box 43, p. 246). The process evaluation includes an assessment of the effectiveness of teamwork among the members of the campaign initiator's staff, the stakeholders, and the partners. This measure is purely qualitative.

Data from the process evaluation will shed light on the results of the other types of evaluation.

Box 53 ■ Process evaluation: assessment of objective exposure

Example 1. The Rear Seatbelt Campaign[259]

With the Rear Seatbelt Campaign in the UK in 1998 (for more information see Box 42, pp. 245-246), the campaign practitioners looked at media coverage to find out where (on which TV/radio channels and in which newspapers) the seatbelt advertisement had been a news item in itself.

With regard to newspapers, they counted the articles in the national press (5 articles) and regional press (300 articles). They also looked at coverage in other coun-

tries to determine where the campaign had been advertised in the news. It was calculated that third-party coverage and public-relations exposure, if they had been paid for, would have matched the actual advertising expenditures of £750,000.

Example 2. The State of Connecticut's Impaired-Driving High-Visibility Campaign[257]

Another example of how to conduct a process evaluation using objective measures can be found in the (U.S.) State of Connecticut's 2003 Impaired-Driving High-Visibility Campaign (for more information see Box 34, pp. 234-235); the volume of website visits was one of the objective measures used.

The media component was concentrated in the two holiday periods of 2003 (the 4th of July and the November/December holidays), and was designed to create the perception of sustained enforcement between the summer and winter holiday periods.

The campaign had its own website; in the process evaluation, the website visits that occurred during the media campaign were counted. Website hits amounted to 12,318 from October 1, 2003 to January 11, 2004.

The evaluation showed that website hits increased during heavier media scheduling and also as the campaign progressed: there were 1,911 hits in October; 3,086 hits in November; 5,434 hits in December; and 1,887 hits between January 1 and 11, 2004.

Outcome evaluation

A social scientist with strong skills in statistical analysis should be involved in processing and analysing outcome data.

You should compare the data obtained in the before period, to that obtained in the during and/or after period(s) (see Boxes 54 and 55). This comparison allows you to determine whether the campaign achieved the predefined primary objective(s) in terms of number and severity of road crashes, number of offences, and frequencies of overt problem behaviour and/or overt safe behaviour. You should also test to see if the campaign achieved its predefined secondary objective(s) in terms of the target audience's knowledge and beliefs about the problem behaviour and the safe behaviour, or self-reported behaviour.

Box 54 ◼ *Evaluation of road accidents and behaviour: the "Speak Out!" campaign aimed at reducing injuries and fatalities among young people[261]*

The campaign appeals to automobile passengers to "Speak Out!" about dangerous driving by telling the driver to be more careful (for more information on this campaign, see Box 28, pp. 222-223). It has two main components: information and enforcement.

The effect of the campaign on the number of people killed or injured in road acci-
dents was evaluated by conducting three types of studies (for more information on
the evaluation design of this campaign, see Box 44, p. 248).

a   A before-and-after study with a matched comparison group.

b   A before-and-after study with a general comparison group. The advantage of
using this comparison group was that the number of injuries was great and thus
random variations were small.

c   A multivariate analysis (Poisson regression analysis) in which the effects of
factors that influence the number of people injured in road accidents, including the
"Speak Out!" campaign, were estimated statistically. The analysis was controlled
for the effects of changes in traffic volume, traffic density, percentage of teenagers
in the population, and long-term trends in the number of injuries among road
users.

The results of the different evaluation studies were very similar. The number of
teenagers 16 to 19 years old who were killed or injured in road accidents was
reduced by about 10%; the number of occupants in this age group who were
killed or injured was reduced by about 15%; and the number of car passengers
who were killed or injured was reduced by about 30%. The number of killed or
injured drivers ages 16 to 19 did not change. Only the reduction among passengers
was statistically significant at the 10% level. It was nevertheless concluded that the
"Speak Out!" campaign had probably been effective in reducing the number of
teenagers killed or injured in Sogn or Fjordane (Norway).

*Box 55 ■ Evaluation of observed behaviour and self-reported data: the British back-
seat seatbelt campaign[259,269]*

In the UK in 1991, it became compulsory for adults riding in the back seat to wear
a seatbelt, and there was an immediate increase from 10% to 40% in observed
rear-seatbelt wearing. However, by 1998 there had been little further improvement
in back-seat passengers' seatbelt rate since the law was passed in 1991.

A one-week publicity campaign was launched in July 1998 to increase aware-
ness of the dangers of not wearing a seatbelt in the back seat of the car, and to
encourage back-seat passengers to do so. In addition to the paid media, there
had been, in advance of the campaign, solid preparation of road-safety officers
and police officers to stimulate activity and media coverage at the local level.
National, regional, and local media were also given briefings and background
material before the launch (for more information see Box 42, pp. 245-246 and
box 53, pp. 282-283).

The 15- to 30-year-old age group was identified as the primary target group (the
target group was defined on the basis of accident statistics and observational data:
this age group accounted for the highest number of deaths and serious injuries in
fatal accidents and it was the group least likely to wear a seatbelt in the back seat;
the target group was also defined by the fact that this was the group less likely than
others to be influenced by a driving adult).

Behavioural change was measured via a bi-annual observational study carried out by an independent research institute. In addition, an extra survey was commissioned by the campaign initiators immediately following the launch. The survey sites were selected to be as representative of the nation as possible in terms of road type. Moreover, observers were stationed at intersections with stoplights to ensure sufficient time for gathering accurate information about the car and occupants. Observations were carried out in eight half-hour sessions spread throughout the day from 8:30 to 17:30.

The surveys showed an increase in rear-passenger seatbelt wearing rates from 44% before the one-week campaign (July 1-5) to 51% immediately after (July 17-21). In October 1998, the rear-passenger seatbelt-wearing rate was 54%. Analysis of behaviour change in rear-passenger seatbelt wearing over a year (April 1998 to April 1999) showed that the effects had been greater among the key target group (14-29 year olds) than among the general population (40% and 23% increases, respectively). Even among children, where the seatbelt-wearing rate was already high, significant gains had been made during the year (from 79% to 90%).

An independently commissioned survey was carried out to evaluate attitudinal and self-reported behavioural changes. A set of questions was placed (before and after the campaign) on RSGB [1]'s general monthly omnibus survey for a representative sample of 2,000 people (16 years and older).

This survey showed an increase in seatbelt-wearing rates over time (February to July 1998). Due to over-claiming, the self-reported rates were higher than found in the observational surveys, but the results indicated an increase in motivation to wear a seatbelt in the back seat. This higher motivation was also confirmed by a later survey in which 42% claimed that they were more likely to buckle up in the back as a direct result of seeing the commercial (37% saying they already wore a rear seatbelt anyway).

In addition, the surveys indicated significant attitudinal change. For example, there was a substantial rise in the numbers recognising that, in a crash, a rear-seat passenger not wearing a belt could injure or kill the driver or front-seat passenger. Recognition that an unbelted rear-seat passenger in the event of a crash might kill the driver rose from 33% to 53% among 16-24 year olds (the increase was significant).

Isolating the effects of the campaign

The factors influencing the campaign's outcome may be difficult to isolate. If your campaign is combined with other actions such as enforcement, a change in the number of road crashes could be the result of the campaign itself or of the supportive activities. In this case, it is difficult to determine the actual effect of the campaign:

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[1]   Research Surveys of Great Britain.

you will simply be able to conclude that your campaign has contributed to reducing the number of road crashes.

To isolate effects brought about by different elements of a campaign, one solution would be to compare the effect(s) of the campaign in several different areas at the same time, with each area having a different set of conditions: enforcement in one area, the media campaign in another, media plus enforcement in a third area, plus a control area with no intervention at all. In order to conduct a rigorous evaluation of this type, the areas must be equivalent to each other. This involves a large financial investment.

5.3 Gathering cost and cost-effectiveness information

Evaluating the total cost of the campaign

The total economic cost of the campaign is relatively easy to measure because all of this information is already known (see Box 56). It includes the net cost (paid resources), cost of earned media coverage, and fixed costs.

–   The net cost (financial cost) or paid resources include the expenses for media placement (advertising agency, media, etc.), development (studies and research, paid staff, materials, supportive activities, etc.), and evaluation (evaluation agency, researchers, etc.).

–   The earned portion of the cost is made up of the free resources. This includes the labour cost of partner staff not paid by the campaign initiator, the value of supportive activities and mediator assistance (staff count, number of hours worked), plus any materials donated by sponsors. Some free elements may be difficult to translate into a monetary value; however, you can do research on wage rates and cost of materials to come up with reasonably accurate cost estimates.

Because the value of free elements is only an estimate, the total cost figure will be off by some percentage. However, this inaccuracy is less serious than errors such as neglecting to include free resources and fixed costs. Indeed, the actual cost figures are generally greater than any error in estimating the value of free resources.

Box 56 ■ *Evaluation of total cost of the "Speak Out!" campaign: reducing injury and fatalities among young people*[261,270,271]

The "Speak Out!" campaign began in 1993 and has been running every year since then in the Norwegian county of Sogn and Fjordane (for more information on this campaign, see Box 28, pp. 222-223).

In 2007, an evaluation of the "Speak Out!" campaign was conducted for the years 2000-2005. The direct costs related to the information portion of the campaign amounted to 7.5 million Norwegian Kroners (NOK) (about 0.95 million euros). These costs included:
–   T-shirts and other informative materials (3 million NOK)
–   A new production of the "Speak Out!" film and production of DVDs (0.5 million NOK)
–   Showings of the film at cinemas/on TV, and other information means (4 million NOK)

In addition, the Norwegian Public Roads Administration had incurred labour costs (developing and organising the campaign). The monetary value of this work was not known because the work was covered under regular budgets. Moreover, there was considerable support from the police that was also covered under regular budgets. A rough estimate of the costs related to police enforcement and work

of staff at the Norwegian Public Roads Administration amounted to 10 million NOK.

Total costs, including both direct costs and labour costs, were thus calculated to be 17.5 million NOK (about 2.2 million euros). The costs incurred by the evaluation of this five-year period were not included.

Economic evaluation

Generally, economic audits are carried out on a single campaign, or in case of an integrated campaign, on a series of campaigns conducted during the year.

A Cost-Effectiveness Analysis (CEA) compares the total cost of the campaign to its performance in terms of non-monetary outcomes. A Cost-Benefit Analysis (CBA) measures the efficiency of the campaign by placing a monetary value on the safety outcome and comparing benefits to costs in order to find out what maximizes a campaign's net benefits.

Methods of attaining a specific objective on the basis of lowest cost or greatest effectiveness (quantified outcome or impact) can be compared to each other for a given cost level. This provides a basis for estimating the cost of each life saved. Looking at the total cost of the campaign as against the total number of road crashes, injuries, and fatalities prevented allows you to calculate the cost per prevented road accident, injury or fatality. This is a calculation of the cost-effectiveness level. If the prevented fatalities/injuries have a monetary value, the benefit/cost level can also be calculated. If the cost of the campaign is less than the monetary gain obtained by the number of prevented road crashes, then the campaign can be considered cost-effective (for more information see *Economic evaluation*, pp. 157-161).

5.4 Drawing clear conclusions about the campaign

The process, outcome, and economic evaluations allow you to draw many conclusions about the campaign: whether or not it was successful (effectiveness), to what extent it was successful and for what reasons, and whether its cost was justified (efficiency).

The analysis of the outcome-evaluation data tells you if the campaign did or did not achieve its predefined primary and secondary objectives in relation to its target audience and the unsafe and/or safe behaviour. Data obtained from the process evaluation (objective and subjective exposure to the campaign), as well as information gained from discussions with campaign partners, may shed even more light on your analysis.

A long-term outcome evaluation based on a change in road-crash and injury statistics, within several periods and over several years, is an important part of any analysis. Such a long-term analysis gives you a measure of the stability and longevity of the campaign's effects. However, long-term effects may be difficult to obtain with only one, stand-alone campaign. In fact, it may be more appropriate to measure long-term effects once several campaigns have been run.

In any case, it is very important to draw clear-cut, unambiguous conclusions on the campaign's effect, not only to accurately identify which elements of the campaign had a proven effect in terms of outcome variables, but also to know what target audience was influenced and under what circumstances. These conclusions will establish the campaign's limitations. It is equally important to find out what elements *did not* work, since this information will permit campaigners to avoid similar mistakes in future campaigns.

Concluding recommendations

To evaluate the campaign and draw clear conclusions about its effectiveness, you should take the following steps:

Implementing the chosen evaluation method for the during- and/or after-campaign periods

Depending on the length of the campaign and the type of data to be collected, you have already defined:

a   The during-campaign period, including the time interval between the launching of the campaign and the start of the evaluation.

b   The after-campaign period(s), including the time interval between the end of the campaign and the start of the first after period, and if applicable, between the two after periods.

When the types of data to be collected are the same during the three evaluation periods, the conditions of data collection and the tools should also be identical across phases.

Processing and analysing the evaluation data

You should compare the data obtained in the before period, to that obtained in the during and/or after period(s). This comparison allows you to determine whether the campaign achieved the predefined primary and secondary objectives.

Gathering cost and cost-effectiveness information

Now that all the evaluations have been completed, cost and cost-effectiveness information should be collected and analysed.

Drawing clear conclusions about the campaign

In all cases, it is very important to clearly establish which elements of the campaign had a proven effect in terms of outcome variables, and for which target audience under what circumstances (i.e., the campaign's strengths). It is equally important to indicate which elements *did not* work (i.e., the campaign's limitations), since this information will enable you to avoid similar mistakes in the future and improve new campaigns.

Writing the Final Report

The final report closes the campaign cycle, at least temporarily. One of the main goals of writing a report is to provide important information and feedback not only to the partners involved in the campaign, but also to stakeholders, researchers, and the general public. It is crucial to disseminate the results of the campaign, ensuring that the information is widely distributed and easily accessible. Indeed, any improvement in future campaigns depends on the availability of thorough and rigorous evaluation reports[132].

The final report should present a clear and concise overview of all the steps carried out in the campaign, including identifying, defining, and/or developing the background, target audience, objectives, strategy, evaluation, and main conclusions. The content and structure of this report is laid out in the diagram below (see Diagram 7).

Diagram 7 ■ *Sub-steps for writing the final report*

6.1	**Starting point: Why write a report?**
6.2	**Content and structure of the report**

Background

Campaign strategy

Evaluation

Conclusions and recommendations

References

Appendix

Authors' note
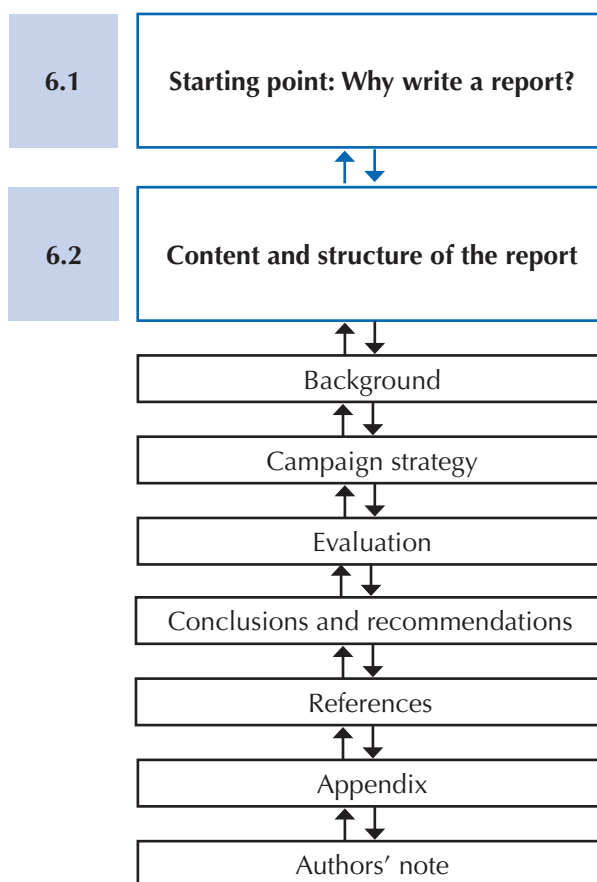
6.1   Starting point: Why write a report?

The main purpose of the final report is to objectively and critically present the campaign background, strategy, and results, including lessons learned for the future.

The report should be readily available, regardless of whether the campaign was a success[132]. To be useful to others, the final report should be available on the internet, usually on the campaign initiator's website or in an international database. Databases of this type provide indexes of reports and quantitative results, thus providing direct access to a large body of research and practitioner knowledge. Moreover, the campaign results and findings included in the final report may be further disseminated by publication in scientific journals, conference proceedings, etc.

The information found in the report is also valuable for conducting meta-analyses in an attempt to identify effective criteria or develop new methodologies (theoretical model, design and variables used to measure the effect(s) of the campaign, etc.).

6.2 Content and structure of the report

To be useful to its readers and facilitate the use of its main content and data, the final report should have a standard structure that includes the following sections (see Box 57), which we will describe in this chapter.

Box 57 ■ Elements and general structure of a campaign report

Title page (title, authors, etc.)
Acknowledgements
Abstract and keywords
Table of contents
Executive summary

Main body of the report:
–   Background
–   Campaign strategy
–   Evaluation
–   Conclusions and main recommendations

References
Appendix
Authors' note

Title page, acknowledgements, abstract and keywords, table of contents, and executive summary

■   The **title page** will display the title of the campaign, the name and logo of the campaign initiator, the date of publication, and the author(s) of the report [1].

■   The second page is devoted to **acknowledgements** to thank funding sources, stake-holders, and other organisations and persons involved in the campaign.

■   The **abstract** should be no longer than fifteen lines (about 300 words). If the report itself is not in English, an English translation of the abstract should be provided. The abstract should give the main goals and objectives of the campaign, the length of the campaign running period, its results, and the conclusions. It should be followed by the **keywords** (three to six keywords).

■   The **table of contents** should be detailed enough to make it easy to find sections of interest to the reader.

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[1]   A detailed authors' note must present and describe the campaign team at the end of the report.

■ The **executive summary** should be no longer than three or four pages. If the report itself is not in English, an English translation of the executive summary should be provided. The executive summary should briefly describe the following:
  – Background
  – Overall goal
  – Specific objectives
  – Campaign strategy
  – Evaluation methods used, including participants and procedure
  – Main results
  – Conclusions and recommendations

Main body of the report

The main body of the report (about 30 to 50 pages) should present a detailed overview of the campaign background and context, the problem behaviour and possible solutions, the target audience(s), the campaign strategy including the theoretical framework, message content, and media plan, the evaluation design and results, and the conclusions drawn. To facilitate reading, this information should be structured in four, clearly labelled sections: background, campaign strategy, evaluation, conclusions and main recommendations.

Background

The background section discusses why the problem addressed by the campaign is important. It should include a review of relevant literature and additional research (if any [1]), enabling the reader to understand the background of the problem, the concerned target audience(s), and how the campaign fits in with earlier interventions. For instance, if the campaign theme is speeding and the target group is young drivers, then this section should include a description of research on that topic along with a discussion of earlier attempts to change this problem behaviour. If the campaign is based on a theoretical model, then this should be described in some detail; if that model was used in previous campaigns, the main results of those campaigns should also be presented.

The background information should provide a review of the following issues:
  – Problem definition and situation analysis.
  – Target audience(s).
  – Overall goal of the campaign.
  – Theoretical model(s) used (if any), and main predictors of the behaviour.
  – Specific objectives in terms of (a) desired communication or behavioural effect (awareness, knowledge, attitudes and/or behaviour), (b) target audience, and (c) expected level of attainment or accomplishment (e.g., 20% increase in awareness).

The background section should end with a description of how the campaign strategy chosen might help in addressing the problem.

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1   Tables describing available data and any additional studies should be given in the Appendix.

Campaign strategy

To better understand the effects of the campaign, it is necessary to supply information about the way it was developed and implemented. In this section, the campaign strategy should be described, including detailed information about the various components of the campaign. This can include information on how the message was designed, types of media and the media plan, and a presentation of supportive activities, if used. You should also state how the campaign was launched.

Message

The design of the message (core idea to be conveyed) and slogans (execution of the message in the actual campaign) should be presented here. You will need to detail the content of the message (developed based on the overall goal and specific objectives of the campaign, the behaviour at stake, the target audience, the chosen theoretical model, etc.), its structure (one-sided or two-sided, negative or positive framing, etc.), and its execution strategy; in other words its style (appropriate wording and terminology for the target audience, visual and audio elements, etc.).

The procedure used to pre-test the message should be described. This part should answer the following questions:
– Who did the pre-tests (pre-testing done in-house or by an outside agency, and by what department or organisation)?
– What was evaluated (what materials)?
– How many pre-tests were performed?
– On what population was the pre-test done?
– What was the size of the sample?
– What theoretical model was used for the pre-test (the same model as the one used to design the message)?
– How was the pre-test conducted, i.e., using what methods and techniques (focus groups, in-person interviews, questionnaires)?
– To what extent did the results of the pre-test alter the final message design?

Type of media and media plan

You should present the media types and media plan used for the campaign, and justify your choice. This section will include:
– Scale of the campaign (i.e., national, regional, or local).
– Scope of each chosen medium.
– Duration and frequency of media exposure.
– Number of messages to be distributed by each media vehicle (number of TV spots, radio spots, leaflets, newspaper ads, billboards, etc.).
– Time schedule for message distribution for each media vehicle.

You might want to add a diagram of the media plan to make it easier to understand[1].

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1 Detailed campaign materials (brochures, scenario of each TV spot, etc.) should be given in the Appendix.

Supportive activities

You should state and explain the choice of supportive activities, in reference to the campaign's overall goal and specific objectives, target audience, budget, chosen theoretical framework, your experience, etc. The following elements should be mentioned:
– Type of supportive activities (e.g., enforcement, reinforcement, etc.).
– Scale (local, regional, national), and location/area of each activity.
– Time schedule for each activity: duration (starting and ending date), number of interventions, times of the day, days of the week, etc.

Campaign launch

You should detail the tools and procedures used to launch the campaign (press releases, press conference, events, press kits, interviews, etc.[1]) and the media coverage received (earned media such as number of articles in newspapers and magazines, number of radio and TV broadcasts mentioning the campaign, etc.). The partners involved in the campaign launch should be mentioned in the authors' note.

Evaluation

The section on evaluation should provide information on the evaluation methods, procedures, and results for each type of evaluation[2], i.e., the process, outcome and economic evaluations. It should end with a critical discussion of the results.

Process evaluation

Method

You should state the types of data collected during the process evaluation (objective and subjective exposure data). For example:
- Objective exposure – number of messages distributed, frequency and duration of the messages, etc.
- Subjective exposure – reach, awareness, recognition, recall, etc.

You should also describe the method(s), procedure(s) and tool(s) used to collect the data, e.g., counting systems for objective exposure, questionnaire(s) for subjective exposure, etc.

Results

You should present the results of the process evaluation, which may concern either objective or subjective exposure.

Objective exposure
- What types of activities were conducted?
- Total exposure – total number of people exposed to the campaign (e.g., number of people who listened to the radio programme, number of readers, etc.).

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1 All of these documents should be included in the Appendix.
2 Tools for evaluating the campaign (questionnaires, observation grids, etc.) must be included in the Appendix.

- Number of messages distributed (number of TV spots, number of advertisements, number of posters displayed, number of leaflets distributed, etc.).
- Frequency, duration, and timing of messages distributed (i.e., how long was the poster displayed, how long did the radio programme last, how many times was the spot broadcast, etc.).
- If the campaign was combined with another activity, the process evaluation should focus on this activity too. For example, if the campaign was combined with enforcement, the process evaluation could include the number of drivers stopped and/or ticketed by the police and the frequency and timing of patrols.

Subjective exposure
- Reach: percentage of road users in the target audience who noticed some element of the campaign, i.e., who came in contact with the message.
- Awareness: percentage of road users in the target audience who were aware of the campaign theme and message and of the seriousness of the problem addressed by the campaign.
- Recognition and recall: degree to which the target audience remembered things about the campaign (cued and uncued recall of specific campaign elements, the campaign message, and the slogans).
- Appreciation: likeability of the campaign, opinion and approval of the campaign by the target audience.
- Message takeaway: people's perceptions of the main thrust of the message; this is to check whether the message was understood.

Outcome evaluation

Method

You should clearly describe what types of data were collected for the outcome evaluation (e.g., self-reported behaviour, observed behaviour) and how the evaluation was conducted, thus enabling others to replicate it. Usually this part is divided into three sections: Participants, Materials, and Procedure.

Participants

The population sample used to evaluate the campaign's effect should be described, along with the segmentation process. The description of the participants should include the following information:
- Total number of participants drawn from the sample.
- Total number of participants who completed the survey.
- Number of participants in each of the different groups (i.e., experimental groups, control/comparison groups).
- Representativeness of the segments selected in each group.
- Age and gender makeup of the groups tested, along with other information that might be relevant for interpreting the results (i.e., road-user type, passengers, profile or occupation).

You should also describe any possible sources of bias regarding the sample. This could be a selection bias or non-response bias.

Materials

You should briefly describe the materials used[1]. If a survey was conducted, the following information is suggested for inclusion in this subsection.

■ Procedure chosen for designing the survey: if the questions included in the questionnaires were formulated on the basis of interviews (a pilot study), then the pilot study should be described.

■ Questions included in the final questionnaire or a copy of the interview guide: if applicable, the connection to the theoretical model used should also be made clear here, and the scales used to measure the questionnaire items should be described.

Procedure

In this part, you should carefully describe the procedure followed to conduct the outcome evaluation. Indeed, any omission or inaccuracy in this section could interfere with the reader's understanding of the report, possibly giving the impression that the results are biased. The following information should be included:

■ Tools used to collect quantitative and qualitative data (observations, questionnaires, interviews, etc.).

■ If observations or in-person interviews were used, then the number of investigators should be stated, along with a reproduction of the instructions given to each investigator.

■ Instructions given to participants (in a questionnaire, an interview, a focus group, etc.). The questionnaire and interview guides are usually included in the Appendix.

■ If a survey was used, then include a description of how it was distributed (by mail, door-to-door).

■ The evaluation design chosen: Was it a (mostly) experimental or quasi-experimental design, a single-case study? Where there experimental groups, control groups or comparison groups?

■ The duration of each phase (according to the type of data collected): starting and ending dates of each evaluation period, including the after periods and whether they were done over the short, middle, or long term.

Results

The results of the outcome evaluation are critical for determining whether or not the campaign's overall goal and specific objectives were met. You should describe the data (descriptive statistics) and tests of the specific and operational hypotheses and model (inferential statistics). By providing as much statistical detail as possible (counts, values, mean frequencies, standard deviations, dispersion, correlations, regressions, etc.)[2] you will enable the reader to repeat the statistical analyses if needed, or include your study in a meta-analysis[272].

Economic evaluation

In addition to describing the results of the process and outcome evaluations, the final report should also contain information on the cost-effectiveness and cost-benefit ratio of the campaign.

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1   A more detailed description should be included in the Appendix.

2   Detailed evaluation tables and diagrams must be included in the Appendix.

■ CEA is used to compare the cost of the campaign in terms of its non-monetary outcomes, that is, the reduction in accidents, fatalities, and/or injuries brought about by the campaign (e.g., number of lives saved due to the campaign).
■ CEA is used to analyse the costs of the campaign in terms of economic gains, that is, to estimate and total up the equivalent monetary value of the benefits of the campaign to the community, as against its actual cost.

You should present the two main components of cost:
■ Direct cost of the campaign, including:
  – Cost of developing and producing the campaign.
  – Cost of media buying.
  – Cost of evaluation.
■ Indirect costs: costs not directly related to the campaign (usually expressed as a percentage of direct costs).

The total budget amount should be broken down [1] and should include the budget and the actual costs, specifying the amount of the budget given by the funding agencies (see Table 22). This information identifies the weight of each funding organisation in the decision-making process and their respective degrees of involvement in the campaign. It also gives an idea of what part of the budget comes from public and/or private sources. However, publishing the funding amounts provided by each sponsoring organisation may be difficult, since this information is generally confidential and partners and sponsors may not agree to have it publicized. In this case, an approximate percentage of each partner's participation can be presented.

Table 22 ■ *Budget given by each partner involved*

	Total	**Initiator**	**Partner (etc.)**	**Partner (etc.)**	**Partner (etc.)**

You should also mention the costs and budget amounts allocated for the different campaign elements: design and production of campaign materials, evaluation, media buying, etc. If not confidential, these costs may be broken down by agency (see Table 23).

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1 Tables breaking down the budget should be given in the Appendix.

Table 23 ■ *Costs and budget allocated to each campaign element*

Agency	Task description	Number of person days (a)	Cost per day (€) (b)	Other costs (in €)	Total cost (a x b)+c	Budget
				Total	€	

Discussion

The discussion is where you will revisit the overall goal and specific objectives outlined at the end of the background section, and present your conclusion as to whether or not the campaign met these goals, and why or why not. You should interpret and analyse the results, taking into account the baseline level of the measures made at the beginning. Moreover, the results of the process evaluation (what was done or not done) will help researchers interpret the results. The results of the during- and after-period evaluations done over the short, middle, and/or long term will allow you to determine whether the effect(s) of the campaign persist over time, as well as explain the presence or absence of effect stability.

You must talk about every factor that could explain the results of the evaluation, and discuss how these factors might have interfered with the campaign, considering the campaign objectives. You should also try to explain some possible unexpected effects, both positive and negative. The discussion of the results should be contrasted with results from previous studies, that is to say, you should state whether your results support or contradict previous findings.

Conclusions and recommendations

The conclusion is a synthesis of the campaign in light of its overall goal, specific objectives, and target audience: To what extent has the overall goal been attained? Did the campaign do what it was intended to do?

You should provide clear conclusions on the effectiveness, strengths, and limitations of the campaign, based on its goal, objectives, and target audience. You should also report conclusions drawn about the economic aspects of the campaign as determined by the cost-effectiveness and cost-benefit (efficiency) analyses. This is essential in providing accountability to campaign sponsors, funding partners, and policymakers. Finally, you should make recommendations that can serve as guidelines for future road safety communication campaigns conducted by your own or other organisations working in this field.

Regardless of the outcome of the campaign, evaluation reports should be available in a library and indexed in a valid database of facts and knowledge (e.g., www.erso. eu, or other international databases). Having the campaign report and its quantitative results included in an international online database will prove useful for communication practitioners and safety researchers desirous of designing, implementing, and evaluating an effective and cost-efficient road safety communication campaign in the future.

References

The references will include the bibliography, databases, websites, etc.

They must be formatted as stipulated in the academic standards of your domain (e.g., American Psychological Association standards), and should include the following elements:
– Bibliography (literature references, scientific and non-scientific journals).
– Databases (police reports, hospital-admission reports, crash reports for lawsuits, insurance reports, traffic-engineering reports, etc.).
– Road-safety monitoring indicators.
– Tracking studies.
– Websites.

Appendix

The Appendix will include a detailed description of some of the campaign materials, as well as tables and diagrams. While the temptation might be to include all of your materials, try to limit the appendix to information that might be useful for others if they want to replicate the campaign.

The attached documents included in the appendix will help provide complete information on the following elements (most of which will be mentioned in the main body of the report):
– Tables detailing the relevant available data and additional studies used for the situation analysis (e.g., statistics on offences and crashes linked to the problem behaviour).
– Campaign materials (the scenario of each TV and radio spot, pictures of billboards, brochures and leaflets, etc.).
– Tools used in evaluating the campaign (questionnaires, observation grids, etc.).
– Evaluation tables and diagrams detailing the results.
– Tables that give a breakdown of the budget

Authors' note

In the authors' note, the campaign team members should be listed and described. The team might consist, for example, of initiator(s), partners, and outside agencies.

Initiator(s)

For each initiator, you should state whether it is a person or an organisation, and in the latter case whether it is public (e.g., government agency) or private (e.g.,

insurance company, special-interest group), national, local, or regional, etc. A brief overview of each organisation's aims and activities should also be given.

Campaign partners

These include financial partners (including sponsors), non-financial partners, and stakeholders.

■ Who are they?
■ What are their reasons for being involved in the campaign?
■ Why did the financial partners decide to provide funding for the campaign?
■ What is their role in the campaign (e.g., driver's training schools might distribute campaign brochures, the police might be involved in enforcement actions)?

Outside researchers and outside agencies

■ Who are they (outside agencies could include an advertising agency, a media-buying agency, a public-relations agency, a press agency)?
■ On what criteria were they chosen?
■ What was their role in the campaign (preparation, design, evaluation, etc.)?

In cases where stakeholders are involved in designing or evaluating the campaign, it is important to make a clear distinction between different categories of stakeholders:

■ Stakeholders involved in setting up and conducting the campaign.
■ Stakeholders who invested in the initiative.
■ Stakeholders who were impacted by the initiative (the target groups).
■ Stakeholders willing to carry out similar campaigns in the future.
■ Stakeholders involved in designing and conducting the campaign evaluation.
■ Stakeholders who will use the results of the evaluation (government agencies, etc.).
■ Opponents of the initiative.

Concluding recommendations

Producing a final report on the campaign is useful for conducting future campaigns. It contains information on all the campaign elements; this information helps improve future campaigns and avoid past mistakes in future campaigns.

The final report should be written with the following recommendations in mind.

Report characteristics

■ The report should be in a standard format so important information will not be left out.
■ It should be available on the internet, usually on the campaign initiator's website or in an international database (for dissemination of the results).
■ It should answer the following questions:
  – Were the effects (if any) due to the campaign?
  – What types of evaluations were conducted (process, impact, outcome, and/or economic)?
  – On what dimensions was the campaign evaluated?
  – Which elements of the campaign were particularly effective, and which were not?
  – Were the effect(s) measured over the short, middle, and/or long term?

Report content and structure

We encourage you to follow the outline given below for your final report:
■ Title page (title, authors, etc.)
■ Acknowledgements
■ Abstract and keywords
■ Table of contents
■ Executive summary
■ Main body of the report
  – Background
  – Campaign strategy
  – Evaluation
  – Conclusions and main recommendations
■ References
■ Appendix
■ Authors' note

Part II ■ Summary

Step 1

The very first step in getting started with a road safety communication campaign consists of identifying the problem, based on information found in statistics and databases on road crashes, fatalities, injuries, offences, and observed behaviours, while taking into account new phenomena that generate media attention.

Once the problem is recognised, the organisational aspects of road safety should be considered and the socio-economic, legal, and political setting should be analysed, including the general and specific contexts.

Then it is necessary to seek out campaign partners and stakeholders who will be able to support your campaign and/or be part of the campaign team (financial and/or non-financial partners, public and/or private organisations).

After that, the budget of the campaign should be determined, which must include the cost of possible media, supportive activities, and campaign evaluation.

A kick-off meeting should be organised with the partners and stakeholders to define the overall goal of the campaign and discuss the strategy and tasks to perform, working within the defined campaign budget.

After this meeting, the first creative brief (or communication brief) should be drafted, in order to provide a general overview of the situation. The creative brief is a means of communication among all of the campaign partners; it should be updated throughout the different stages of campaign development.

Once the needs have been set forth in the creative brief, any outside agencies (advertising, production, media-buying, and public-relations agencies, as well as researchers) should be chosen following a call for bids or request for proposals.

Step 2

The next step consists of analysing the situation, starting with an in-depth analysis of the problem and possible solutions. For this, you can look to four different sources: databases and statistics, research on the main predictors of the problem behaviour (or behavioural change), previous campaigns and related actions or programmes, and market studies on the target audience(s).

You can use this information to select the target audience, segment it (if necessary), and then choose the market segments to address in the campaign. Then you will need to analyse the main predictors of the unsafe behaviour or the desired behavioural change. For this purpose, it is advisable to rely on a theoretical model.

The next step consists of strategising on how to reach and address the chosen segment(s) based on persuasion model(s).

At this point, the overall campaign goal defined in the previous step should be translated into specific objectives – primary objectives that determine what exact behaviour is desired in the target audience, and secondary objectives that identify other factors likely to contribute to achieving the primary behavioural objectives.

Finally, you should take a preliminary look at the methods used in the past to evaluate similar campaigns (design and variables). The utility of evaluations is different for current and future campaigns. For the current campaign, evaluation allows you to monitor the implementation of the campaign and intervene if needed; it helps determine campaign efficiency, i.e., knowing what works or does not work (with respect to your objectives, the target audience, etc.), find out if there are any unexpected benefits or problems (which is helpful for future campaigns), and determine whether the effects of the campaign justify its cost (to provide accountability to funding sources, stakeholders, partners, and policymakers, which should help with future fundraising). Later, campaign evaluations provide information that can help improve the implementation of future campaigns and avoid the risk that they will be ineffective.

Step 3

After analysing the situation, it is time to design the campaign strategy, message, media plan, and the various evaluations.

To develop the campaign strategy, you should take the campaign's specific objectives and define them in an operational fashion. The campaign strategy should be embedded in a broader, overall social-marketing strategy based on theoretical models and aimed at changing behaviour. Defining the strategy includes defining the type of campaign and its scale, in accordance with the areas where the problem occurs, the target audience, and how it can be reached. Moreover, past campaigns and actions can provide input to the strategy. Once the campaign strategy is defined, its key points should be added to the creative brief.

Next, you should define the content of the message and its execution strategy (style) according to the problem behaviour and its main predictors for the target audience, the general characteristics of the target audience, any environmental factors, and the sender's characteristics as well. For this, you can conduct qualitative studies (individual interviews, focus groups or creative brainstorming sessions, etc.).

After defining the message, you will need to choose the media types, media vehicles, mediators, and supportive activities to be used in the campaign. You should define the media plan and choose campaign identifiers (spokesperson, logo, mascots, brands) based on the campaign's budget, timing and length, the

advertising rates of each media and media vehicle, demographic statistics of coverage, openings, and so on.

Once the media plan is defined, you will need to develop the message and slogans in their full context, which means producing the materials needed to convey the core message of the campaign and its supportive activities (using text, images, sounds, etc.). All campaign messages and slogans should be pre-tested by measuring their comprehension and likeability, and their effects and direction of impact on knowledge, beliefs, and/or behaviours. The procedures, activities, and materials should also be pre-tested before actual implementation of the campaign.

After designing the campaign, you should prepare the evaluation, whether it will be conducted in-house or by one or more outside agencies. Again, campaign evaluation is particularly important because it allows you to monitor the imple-mentation of the campaign and intervene if necessary (i.e., find out if the campaign is working or not according to its specific objectives and target audience). It also lets you know if the campaign is cost-effective, and more specifically, on what dimensions it works the best (for use in future campaigns).

The effect(s) of the campaign should always be assessed in reference to a baseline measurement. Therefore, you should choose an appropriate evaluation design with, at minimum, a before- and an after-period measurement, with a control or comparison group. You should define the sample for the evaluation on the basis of the schedule, budget, target-audience size, type and theme of the campaign, and any supportive activities.

The process evaluation assesses whether or not the campaign is operating as planned and is reaching the target audience, which is measured in terms of objective and subjective exposure to the campaign. The outcome evaluation measures the effect(s) of the campaign on road crashes, observed behaviours, and self-reported knowledge, beliefs, and/or behaviours. The economic evalua-tion measures the campaign's cost-effectiveness and efficiency, so it tells you if the campaign results are proportionate to the monetary investment.

To choose the methods (qualitative or quantitative) and tools needed for the evaluations, you should take into account feasibility, timescale, and available resources. The data-collection conditions and materials must be the same for every evaluation period.

Step 4

Now that you have designed the campaign and the evaluation, it is time to imple-ment the before-period measurement, finish the production of materials, and launch the campaign. The campaign's progress should be monitored carefully in order to deal with any problems that arise during execution.

Before launching the campaign, you should conduct the before-period study. This involves designing the study, checking the materials against the evaluation design and constraints of the field, and hiring and training investigators. The evaluation should be monitored and quality-controlled.

At the same time, the production of the campaign materials as well as media buying and scheduling should be carried out, either in-house or by an outside agency. These tasks include several phases: technical briefing, pre-production, production, approval of the produced materials by the campaign initiator, and post-production.

At this point, you should be able to implement the campaign, starting with the launch (first day of the campaign) and release of campaign materials, and then carrying out any supportive activities according to the planned schedule.

To increase awareness in the target audience, it is advisable to try to generate good earned-media coverage, which involves building a long-term relationship with the press. For this purpose, you should keep an updated list of all press contacts, and establish your organisation's reputation as an active and reliable source of information. Moreover, you can use methods such as press releases, press conferences, media events, press kits, interviews, and so on.

The implementation of the campaign should be monitored. Initial feedback from the process evaluation will reveal any implementation problems so you can deal with them while the campaign is still running.

Step 5

The during- and after-period evaluations are conducted while the campaign is running and after it has finished, respectively. This includes data processing and analysis, and drawing clear conclusions. You should compare the results of the before-period evaluation to those of the during- and/or after-period results. This requires maintaining the same conditions of data collection and the same evaluation materials as the ones used for the before-period evaluation. The length of each period depends on the type of data collected. The evaluation should be quality-controlled, to verify that it has been implemented properly.

Data on knowledge and beliefs will help you understand if the campaign has had an effect on road crashes and observed behaviour. The process evaluation (objective and subjective exposure) sheds further light on the outcome data and facilitates analysis.

Cost and cost-effectiveness information should be gathered for the economic evaluation. Information concerning the total cost of the campaign is already available. The cost-effectiveness of the campaign compares costs to benefits expressed as the monetary equivalent of prevented road crashes, injuries, and fatalities. The campaign is considered cost-effective when its cost is less than the amount of money saved due to the campaign.

Finally, you should draw clear conclusions about the strengths and limitations of the campaign, based on the various evaluations that indicated whether the campaign worked or not.

Step 6

The final report wraps up the whole campaign process. It justifies the effort and money invested in the campaign by the funding organisations, policymakers, authorities, partners, stakeholders, and the campaign team.

The report should provide an overview of each step taken to develop the campaign and any supportive activities, which means reviewing the background of the campaign, its target audience, objectives, strategy, evaluation, and main conclusions. It should also provide recommendations, that is to say, guidelines for future road safety communication campaigns.

The final report should have a standard structure. It should present essential elements such as the rationale of the campaign, the qualifications of the staff involved in both the campaign and the evaluation, and the design of the campaign, including the development of messages and the frequency and intensity of message or slogan dissemination. It should also describe the evaluation design and results, and present conclusions about the effectiveness, strengths, and limitations of the campaign based on its overall goal, specific objectives, and target audience. Finally, it should provide information on the economic aspects of the campaign obtained via the cost-effectiveness and cost-benefit analyses.

Conclusion

This manual was written in collaboration with practitioners and researchers. Our goal was to present a handbook that could be used by campaign practitioners, researchers, students, and any other organisation that might be involved in a road safety communication campaign, providing information and presenting a step-by-step guide for designing, implementing, and evaluating road safety communication campaigns.

Road safety campaigns should be based on thorough research in order to increase their chances of success. Research can help better identify a problem behaviour and its causes, and find out if the behaviour is due to a lack of information (in which case it is unintentional) or if, on the contrary, the individual chooses to commit the unsafe act despite having knowledge of the problem (in which case it is intentional). Research helps us understand the main motivations underlying a particular problem behaviour and also identify the target audience and its main characteristics. This in turn can help in designing an effective campaign message.

Moreover, it is essential to learn from the past, which here, means learning from research on past road safety communication campaigns. Past campaigns that were properly evaluated in order to draw valid conclusions, and whose results have been disseminated in databases, help in identifying key elements contributing to the success of road safety campaigns. If you find campaigns on the same theme that have produced positive effects, you can examine them for potential adaptation to a new situation and/or for getting information on the strategy and methodology used.

The manual is divided into two parts: the first part presents a theoretical background on road safety communication campaigns; the second part gives practical information for designing, implementing, and evaluating a campaign.

The first part begins with a presentation of some statistics on road accidents in Europe, their main causes, and explanations. The important role of human factors in accidents is then discussed. In view of providing insight into what motivates a road user to adopt unsafe behaviour, and how to modify these motivations, we have described the major theoretical models found in this field of research. Next, we have described some different types of campaigns and marketing strategies, as well as key elements for enhancing the chances of success in future road safety communication campaigns, further emphasising the importance of learning from the past. We have insisted on the importance of identifying the target audience and its characteristics, selecting a specific target audience, and segmenting that audience, if necessary, before designing the message. We have outlined the development of the message for different media and described how the content of the message is presented and processed. We have also detailed the features of road safety communication campaigns. Last but not least, we have presented the different designs, techniques, and tools available for evaluating campaigns, including reliable methods for testing the campaign's effect(s), recommendations for isolating these effects when the campaign is combined with other action(s), and methods for assessing cost-efficiency and cost-effectiveness.

The second part of the manual presents a wealth of practical information for designing, implementing, and evaluating road safety communication campaigns, information that was obtained in part from interviews with campaign practitioners and evaluators in Europe and abroad. We have detailed the six steps to take when developing a campaign:

– *Getting started*, which involves identifying the problem, analysing the organisational and socio-economic context of road safety, determining the budget including the cost for research and campaign evaluation, selecting partners and stakeholders who could be involved in the campaign process, developing the creative brief, and looking into possible contributions of outside agencies and their interactions with the initiator.

– *Analysing the situation,* which includes performing an in-depth analysis of the problem and its possible solutions based on research and past initiatives, identifying the target audience and conducting research on how to reach and influence it, and translating the overall goal of the campaign into specific objectives.

– *Designing the campaign and the evaluation*, which involves defining the campaign strategy, designing the message content and style, choosing the media vehicles and media plan, developing and pre-testing the message and slogans in their full context, and planning and pre-testing the campaign evaluation.

– *Conducting the before-period evaluation and inplementing the campaign*, including outlining the before-phase of the evaluation, the production of campaign materials, and the actual launch of the campaign.

– *Completing the evaluation and drawing conclusions*, which involves implementing the chosen method for the during- and/or after-period evaluations, including quality control of each evaluation, data processing and analysis, cost-benefit and cost-effectiveness assessments; this allows practitioners to draw valid conclusions and assess the limitations of the campaign.

– *Writing the final report*, using a standard report outline and reviewing all information needed by the reader to arrive at a good understanding of the campaign and its results.

Based on the material presented in this manual, we would like to make the following general recommendations.

Base the campaign on statistics and research

We recommend that campaigns be based on a solid foundation: databases of road-accident statistics, offences, research (observations, surveys, market studies, models for predicting and explaining behaviour, models of behaviour change). Campaigns can also be based on emerging issues. Statistics are generally the first aid to defining the theme of a campaign because they provide initial information about the target audience. However, statistical information is not sufficient in and of itself. It is therefore useful to base the campaign on available studies, and/or to conduct additional studies designed around theoretical models whenever the necessary information is not available. Such custom-designed studies can provide in-depth information about the problem behaviour and factors that might predict it, while existing published research helps in identifying the target audience in detail and segmenting it into smaller groups.

312   CONCLUSION

Select a specific target audience

To reach the target audience and increase the likelihood of modifying its behaviour, campaign practitioners should carefully define their audience. Defining the target audience requires great attention to detail, and can be done by means of audience segmentation. Segmentation techniques can be based on demographic, geographic, psychographic, and/or behaviour variables, theoretical models, or the characteristics of the primary and secondary audiences. Crossing different segmentation criteria can be useful to achieve greater precision. The five elements of the marketing mix, and thus of the message, must be adapted to each segment. Selecting a specific target audience also enables practitioners to set up comparison groups for evaluating the campaign. In such evaluations, experimental subjects exposed to the campaign are compared with subjects from a supposedly similar population not exposed to the campaign (without random assignment between the two groups). Alternatively, a population not specifically targeted by the campaign but exposed to it may be compared to a population specifically targeted by the campaign.

Translate the overall goal into specific objectives

The overall goal of the campaign was defined on the basis of previous research, so it offers a preliminary idea about what the theme of the campaign should be, as well as a notion of who the possible target audience(s) might be. However, such general information usually does not provide the level of specificity required for developing a campaign strategy. That is why it is quite useful to define specific campaign objectives. The campaign's specific objectives must precisely identify the problem behaviour that needs to be changed into safe behaviour (the primary specific objective), as well as other factors (the secondary objectives) that might contribute to achieving this primary objective, i.e., to cause the target audience to adopt the safe behaviour. In addition to being the cornerstones of the campaign strategy, these elements will be the basis of the campaign evaluation, and the yardstick for measuring whether or not the campaign was successful (i.e., achieved its goal and objectives).

Devise the campaign strategy and plan the campaign

The campaign strategy refines the goal and the specific objectives in operational fashion. It is part of an overall social-marketing strategy aimed at changing behaviour. The campaign strategy is based on the theoretical models used to define the specific objectives, so it is critical in determining the type of campaign to run. Indeed, the campaign can be a purely media-based campaign or be combined with other actions. It can be conducted on different levels: locally, regionally, or nationally, depending on the problem behaviour, the target audience, and the areas where the problem occurs most. The campaign strategy also defines how the target audience can be reached and influenced. The campaign, the communication strategy, and any supportive activities must all be carefully planned. The message, choice of media, media plan, and supportive activities must serve the chosen strategy by getting the message to the selected target audience.

Formulate the message

A message is more likely to have an effect if the person receiving it feels motivated to process it. This in turn increases the chances of having the person process the message in depth, which implies actively thinking about it and elaborating upon its content. However, motivation alone is not enough. An individual also must have the cognitive ability to process a message, something that can only happen when the message is understandable. Accordingly, an effective message must be believable to the audience (credible), be honest and convey a behaviour that is possible to achieve (trustworthy), be heard repeatedly (consistent), easy to understand (clear), capable of generating change (persuasive), relevant to the person (relevant), and appealing (attractive). The message should therefore be based on general persuasion models and models of specific techniques such as framing. In testing a message, the thought-listing task is a valuable tool for determining which messages lead to greater changes in knowledge, beliefs, and/or behaviour.

Conduct a proper implementation of the campaign

The timing of the launch is very important since it creates unique opportunities to get free publicity for the campaign. In cases where the campaign is combined with other actions, careful coordination of all activities is important to make sure that each component is implemented as scheduled. This requires very strict organisation and good communication between the initiator and the campaign partners and mediators. To determine whether the campaign has been implemented as planned, and whether and to what extent the target audience is being reached, you should use the initial feedback from the process evaluation. This requires strict coordination and follow-up.

Ensure rigorous evaluation

The importance of evaluating road safety campaigns should not be underestimated. Evaluation may be costly, but it is the best way to find out if a campaign has been a success or not, and if the money was well spent. To draw valid conclusions about the campaign's effectiveness, cost-effectiveness, and efficiency, the campaign should be assessed against its specific objectives, while taking into account the baseline level of knowledge or the prevalence of the safe behaviour before the campaign. Moreover, if it is to abide by good principles of methodology, the evaluation should (a) refer to the theoretical model (or to the main predictors of the problem behaviour) on which the campaign was based, (b) use control or comparison group(s), and (c) use an appropriate design involving at least two measurements, taken before and after the campaign. As a supplement to these two measurement periods, during-campaign phases and/or additional post-campaign phases may be added to obtain more information on the stability of the campaign's effect(s).

Disseminate the results

The results should be presented in a final report. The report should include the rationale of the campaign as well as detailed results. It should be presented in a standard format and conclude with a discussion of the strengths and limitations of the campaign and how the results might be used to improve future campaigns. Such

reports help practitioners build on past experiences when preparing, researching, and designing future campaigns. Whatever the effect(s) of the campaign, the final report should be made available in a library and indexed in a validated database of facts and knowledge. International online databases that index campaign reports and quantitative results are useful for communication practitioners and safety researchers desirous of designing, implementing and evaluating a road safety communication campaign in the future. They allow policymakers to develop effective road safety policies, and assist local, regional, and national authorities in making decisions regarding financial support for road safety campaigns.

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The aim of this manual is to provide a detailed and practical tool for designing, implementing, and evaluating road safety communication campaigns. It contains both a statistical and theoretical background on road safety and communication campaigns, and a wealth of practical recommendations for conducting campaigns at the local, regional, national, and international scales. It is aimed at decision-makers, practitioners, researchers, students, and any organization involved in designing and implementing road safety communication campaigns in Europe and abroad.

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