Enhancing the Evaluation of Road Safety Communication Programs: Developing an Evaluation Strategy

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Abstract

Motor Accident Commission (MAC) funds and delivers the South Australia (SA) Government's road safety communication programs. MAC is committed to improving the evaluation of its road safety communication programs, as a means of ensuring the value of the program spend and evolving understanding of, and application of, the factors of success to maximise road safety outcomes. MAC has developed a practical Evaluation Strategy for road safety communications based on a review of international research and best practice. This paper describes the Evaluation Strategy and its development to assist other jurisdictions in undertaking evidence-based and practical approaches to determine the efficacy of road safety communication programs. The Evaluation Strategy identifies a framework and structure for the program development-implementation-improvement cycle. Rigorous and comprehensive evaluation methods can impose significant costs. The MAC Evaluation Strategy therefore provides Tiered Evaluation Options which allow the level of evaluation to be determined depending on budget and the size, originality, and type of program being considered. Three types of communication programs are identified, and five tiers of outcome evaluation options as well as two process evaluation options are described for each type of communication program. The Strategy goes beyond common evaluation processes by adding the potential for evaluations based on dedicated observations of relevant behaviours on-road and provides for a more rigorous assessment of the relationship between campaigns and changes in crashes and casualties.

Introduction

Road safety communication programs continue to be widely implemented because of their potential benefits for road safety, especially when developed according to an evidence-based set of principles (Delhomme et al., 1999; Elder et al., 2004; Elliot, 1993; Elvik & Vaa, 2004; Phillips, Ulleberg, & Vaa, 2011).

MAC undertakes media campaigns with paid advertising placements, electronic media, partnership programs and sponsorships which include communications to various audiences, editorials, media interviews, releases and responses. It is critical to understand which communications are working by how much, and for whom. Evaluation of communication programs allows more effective subsequent allocation of resources and evolving understanding of, and application of, the factors of success.

While evaluation is not easy or cheap, MAC has developed a practical Evaluation Strategy for road safety communications based on a review of international research and best practice. This paper describes this Strategy and offers a set of evaluation methods to be employed depending on the communication program and its context.

Evaluation Strategy Framework

The Strategy sets out the Evaluation Vision and Objectives. The Strategy is guided by MAC's value and commitment to evidence-based development-implementation-improvement cycle as described

in Figure 1. The Strategy contains a Glossary (included at the end of the paper) for additional discipline and describes in detail the implementation for both process evaluation and outcome evaluation.

Figure 1. Evidence-based Road Safety Communications Improvement Cycle
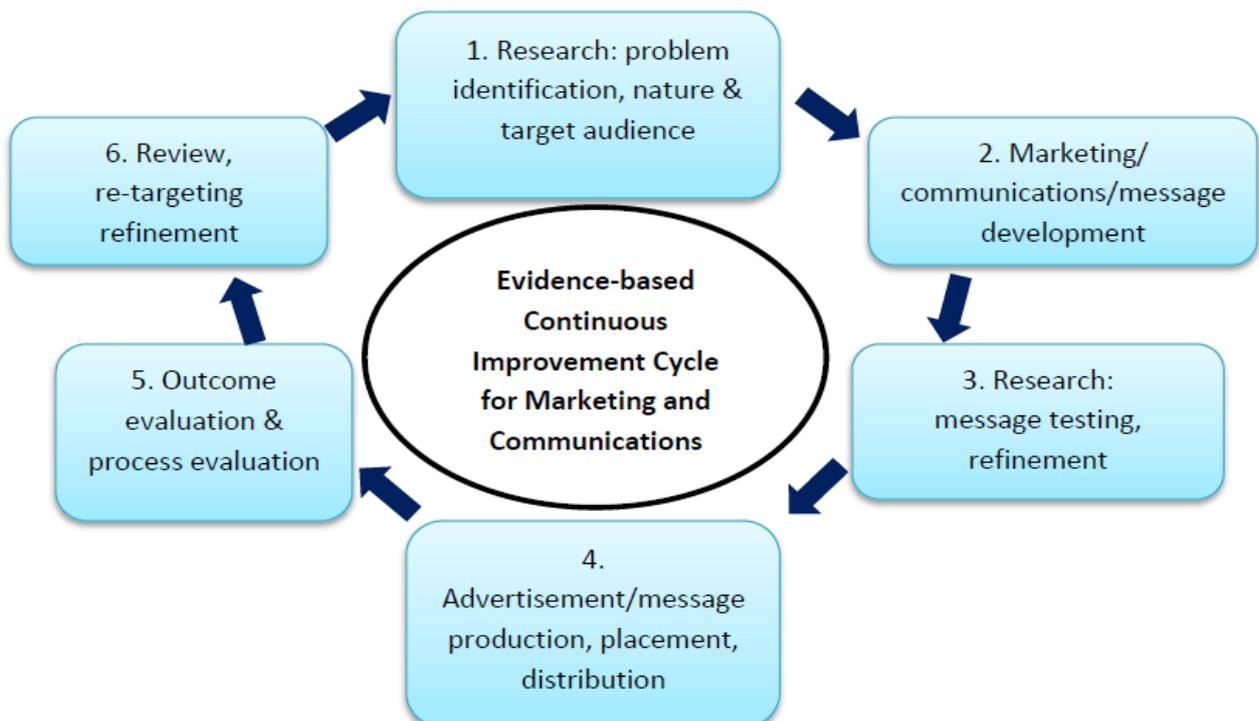
Communication Program Type

Different types of communication programs are generally not distinguished because of common erroneous assumptions such as the simple assumed causal connections between attitudes and behaviours. In psychological reality, changes in apparently relevant attitudes may not result in expected changes in behaviour. Sometimes behaviour may change first and then generate a change in attitude (Job et al., 1997), and other times attitude change does lead to relevant behaviour change. Understanding these different types of communication programs is critical to effectively choose the most appropriate evaluation approach. To achieve this, the Strategy identifies three types of road safety communications, related to different causal sequences:

> **Type 1:** Influences behaviours directly, sometimes without and sometimes followed by attitude change.
> **Type 2:** Influences behaviours via attitudes.
> **Type 3:** Generates changes in attitudes or beliefs which allow more effective other actions (e.g. reduced speed limits, reduced BAC limits, increased enforcement or increased penalties) which will change behaviours.

Evaluation Implementation

The Strategy applies both process evaluation and outcome evaluation.

Process Evaluation

Process evaluation (including formative evaluation) involves the assessment of the integrity of the development and implementation of the program which influence the extent to which intended outcomes are achieved. Road safety communication programs can and should be developed in accordance with these evidence-based principles which have been demonstrated to enhance the likelihood of the success of a campaign in relevant research.

While many methods of process evaluation exist, the Strategy offers two methods of process evaluation which apply to all the three types of communication programs:

A. *Analysis against a Best Practice Checklist which has been developed based on relevant evidence*

The quality of road safety campaigns can be assessed against the following core good practice checklist of campaign development process, which has been based on the relevant evidence (CAST, 2010; Job, 1988; Phillips et al., 2011) and practical experience. The assessment is based on a yes/no determination. If the campaign development and design meet all the 15 criteria, the campaign is considered good international practice. Meeting five additional criteria listed under point 16 provides additional benefits and a campaign which meets all the 20 criteria is considered best international practice.

The road safety campaign:

1. Is explicitly based on a broader road safety strategy;
2. Is sufficiently funded;
3. Is based on a broad analysis of the situation to determine the applicability of the campaign;
4. Is developed in consultation with road safety partner organisations;
5. Is selected based on both the extent of the problem and the likely impact of road safety communications as a mode of intervention to address the problem. It is critical to assess this problem based on serious injury or death causation rather than simply on prevalence of the behaviour or all crashes;
6. Is based on well researched problem behaviours, beliefs and attitudes—uses a well-researched psychological theory as the conceptual base;
7. Is aimed at a specifically selected target audience, with soundly judged well research segmentation;
8. Addresses an explicit target behaviour with tailored message to the motivation and needs of these subgroups;
9. Is delivered in a mode/s which achieves maximum reach of the target audience and target behaviour based on research;
10. Has a specific objective (*Note*: General objectives such as 'increase awareness' are weak and not considered to have met good practice. Specific objectives such as 'increase community acceptance of enforcement of speeding behaviour' and 'increase seat belt wearing on rural roads' are required to meet good practice);
11. Is generated with professional creative;
12. Has processes for testing the creative such as through focus groups and audience testing;
13. Is developed with quality production values (i.e. the materials need to look credible, good quality, and have the right 'look and feel' for the audience);
14. Has ongoing tracking and monitoring of campaign outcomes through key performance indicators selected based on the campaign objectives;
15. Undergoes full outcome evaluation[1];
16. Meets additional criteria:

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[1] See Tiered Outcome Evaluation options below.

16.1 Delivery at the state level;

16.2 Aligned with enforcement activities;

16.3 Content emphasizes the risk of detection;

16.4 Messages are based on less extreme and more common events rather than on fear or severe (but relatively rare) events;

16.5 Runs for a month or up to 3 months at maximum.

B. Estimation of effects based on Campaign Features as determined in the most recent meta-analyses of previous outcome evaluations

Many evaluation studies of road safety communication campaigns have been published in the scientific literature or described in various reports. An estimate of the likely benefits of road safety communication campaigns on reducing crashes and trauma was made based on the most recent and comprehensive available meta-analysis (Phillips et al., 2011). Beneficial effects can be broadly applied to estimate the value of a road safety communication campaign as follows:

1.   Assume a 12% reduction in crashes from campaigns which meet all the 15 good core practice criteria above.

2.   Apply a conservative allowance of 1% extra benefit if the campaign is run at the state (not national) level.

3.   Apply a conservative allowance of 3% additional benefit when the campaign is aligned with enforcement activities and the message emphasises the risk of detection, or reduce by 3% when not.

4.   Make no allowance for the emotional content (fear, fun, guilt, sympathy) because it is not clear that all these would work similarly well.

5.   Assume the beneficial effects last for the duration of the campaign with a maximum duration of benefit of 3 months if the campaign lasts longer than this period.

6.   Assume the net crash reduction applies equally to all crash severities in the absence of precise information provided by the meta-analysis.

The first method (A) is fundamental to the development of the communication program. The second method (B) is based on published evaluations, and so while it is also generally applicable to campaigns, the results are based on larger campaigns such that full published evaluations were undertaken. Thus, the effect estimation may only be applied to campaigns of sufficient size to achieve a strong reach. . Having an estimated outcome may help in communication to partners of the possible value (and/or justification) of the campaign.

Outcome Evaluation

Outcome evaluation involves quantification of the effectiveness of the communications in terms of road safety outcomes and the prescribed program aims. The ways in which outcome evaluation is conducted depend on the types of outcomes being measured and this may depend on the Type of communication programs. Therefore, the Strategy identifies outcome evaluation methods for each of the three Types of communication programs.

Outcome evaluations can impose significant costs, and thus the extent of evaluation depends on the budget as well as the size and the originality of the program being considered. More comprehensive evaluation is suited to larger and more original programs within appropriate budget and logistical considerations. Therefore, the Strategy offers a new approach identifying different Tiers of outcome evaluation as options for each Type of communication programs. The Strategy also describes the advantages, limitations and optimal use of each Outcome Evaluation Tier and provides brief notes

on the ways to implement and the methodological rigour required for each of the outcome evaluation components.

Four Tiers of Outcome Evaluation for Communication Program Types 1 and 2

The Strategy describes four options for outcome evaluation of communication program Types 1 and 2 (Figure 2). It is recognised in the Strategy that it is also legitimate to choose *No Outcome Evaluation* in certain circumstances. Tier 1 involves all four evaluation components and is the most comprehensive evaluation option. Subsequent tiers have one less evaluation component from the previous higher Tier. The lowest level Tier 4 involves only one evaluation component.

Five Tiers of Outcome Evaluation for Communication Program Type 3

The Strategy provides five options for outcome evaluation of communication program Type 3 (Figure 3). As before, it is also legitimate to choose *No Outcome Evaluation* and Tier 1 involves all five evaluation components and subsequent tiers have one less evaluation component from the previous higher Tier.

Figure 2. Four Tiers of Outcome Evaluation for Communication Program Types 1 and 2

Evaluation component	Self-report assessment of program effects	Measures of people's use of website/social media in response to the campaign (*if relevant to the aims of the campaigns*)	Assessment of changes in crash, injury and deaths arising from relevant factors, and if reasonable cost calculations are available benefit cost ratio calculation for the program	Objective measures of the relevant target behaviour on the road
Tier 1				
Tier 2				
Tier 3				
Tier 4				

Figure 3. Five Tiers of Outcome Evaluation for Communication Program Type 3

Evaluation component	Self-report assessment of program effects, specifically targeting attitudes & beliefs regarding other possible road safety actions (e.g. changes in policy, law, or practice) to address the target problem	Measures of people's use of website/social media in response to the campaign (*if relevant to the aims of the campaigns*)	Success in obtaining relevant changes in policy, law, or practice (by MAC or partners)	Assessment of changes in crash, injury and deaths arising from relevant changes in policy, law or practice, and if reasonable cost calculations are available benefit cost ratio calculation for the program	Objective measures of the relevant target behaviour on the road

Tier 1					
Tier 2					
Tier 3					
Tier 4					
Tier 5					

How to make decisions on the optimal Tier

All the above evaluation options for communication program Types 1, 2 and 3 have advantages and limitations and the choice of which Tier is dependent on budget as well as what is optimum for each program. Tables 1 and 2 describe the advantages, limitations and optimal use of each Outcome Evaluation Tier for the three communication program Types. In addition, evaluations of Type 3 communications depend on timelines and connections between the communications and the subsequent relevant change of policy, regulation, or practice.

Table 1. Different Options for Outcome Evaluation of Type 1 and Type 2 Communication Programs: Advantages, Limitations and Optimal Use

Option	Advantages	Limitations	Optimal use
Tier 1	• The most comprehensive best practice evaluation • Direct future improvements & inform future practice • More confidence in the real impact on targeted behaviours • More confidence in attributing changes in crash, injury & deaths to changes in targeted behaviours	• Significant costs to develop & implement various data collection tools & evaluation design • Advance and long-term planning & implementation required	• Large-scale original programs • Observing behaviours is feasible • Sample size required to detect a change can be achieved
Tier 2	• Already existing data on crashes, casualties & crash savings can be applied • Identifies return on investment • Less costly than Tier 1 evaluation • Can direct future improvements & inform future practice but to a lesser extent than Tier 1	• Self-report survey development & implementation costs • Less certainty that changes in crash, injury & deaths were caused by actual behavioural change	• Large-scale original programs where objective behavioural data collection is not feasible (e.g. too large sample size requirement; unsafe data collection sites, budget constraints) • Small to medium-scale original programs
Tier 3	• Impact on digital media is known • Less costly than Tiers 1 & 2 • Completed in a reasonably short timeframe • Can direct future improvements & inform future practice but to a lesser extent than Tiers 1&2	• All Tier 2 limitations apply • Impact on crashes, injuries and deaths is not known • Return on investment is not known	• Small to medium-scale programs which are linked with website/social media
Tier 4	• The least costly form of evaluation • Completed in shortest timeframe of all evaluation	• All Tier 3 limitations apply • Self-report may not reflect true changes	• Small to medium-scale programs

	Tiers • Can direct future improvements & inform future practice but to a lesser extent than Tiers 1-3	in attitudes and behaviours • Impact on digital media is not known	
No evaluation	• Allow implementation of projects with limited budget & timeframe	• Program effectiveness is not known • Cannot direct future improvements & inform future practice	• Small scale communication programs (e.g. local community campaigns, or where sufficient sample size is not likely to be achieved) • Re-launch of a previously evaluated program (possibly with minor refinements)

Table 1. Different Options for Outcome Evaluation of Type 3 Communication Programs: Advantages, Limitations and Optimal Use

Option	Advantages	Limitations	Optimal use
Tier 1	• The most comprehensive best practice evaluation • Direct future improvements & inform future practice • More confidence in the real impact on targeted behaviours • More confidence in attributing changes in crash, injury & deaths to changes in targeted behaviours	• Significant costs to develop & implement various data collection tools & evaluation design • Advance and long-term planning & implementation required • Significant collaborations with partners	• Occasions where large-impact changes in policy, law, or practice occur • Observing behaviours is feasible • Sample size required to detect a change can be achieved
Tier 2	• Already existing data on crashes, casualties & crash savings can be applied • Identifies return on investment • Less costly than Tier 1 evaluation • Can direct future improvements & inform future practice but to a lesser extent than Tier 1	• Self-report survey development & implementation costs • Less certainty that changes in crash, injury & deaths were caused by actual behavioural change • Significant collaborations with partners	• Occasions where large-impact changes in policy, law, or practice occur but objective behavioural data collection is not feasible (e.g. too large sample size requirement; unsafe data collection sites, budget constraints) • Occasions where small to medium-scale changes in policy, law, or practice occur
Tier 3	• Impact on policy, law, or practice is not known • Less costly than Tiers 1 & 2 evaluations • Can direct future	• All Tier 2 limitations apply • Impact on crashes, injuries and deaths is not known	• Occasions where small to medium-scale changes in policy, law, or practice occur, but evaluation time or

	improvements & inform future practice but to a lesser extent than Tiers 1&2	• Return on investment is not known • Self-report may not reflect true changes in attitudes	budget is tight
Tier 4	• Impact on digital media is known • Less costly than Tiers 1-3 evaluations • Completed in a reasonably short timeframe • Can direct future improvements & inform future practice but to a lesser extent than Tiers 1-3	• All Tier 3 limitations apply • Impact on policy, law, or practice is not known	• Occasions where small to medium-scale changes in policy, law, or practice occur, but evaluation time and budget are tight • Program is linked with website/social media
Tier 5	• The least costly form of evaluation • Completed in shortest timeframe of all evaluation options • Can direct future improvements & inform future practice but to a lesser extent than Tiers 1-4	• All Tier 4 limitations apply • Impact on digital media is not known	• Occasions where small to medium-scale changes in policy, law, or practice occur, but evaluation time and budget are tight
No evaluation	• Allow implementation of projects with limited budget & timeframe	• Program effectiveness is not known • Cannot direct future improvements & inform future practice	• Occasions where small-scale changes in policy, law, or practice occur (e.g. at local council level)

Implementation of each evaluation component

A brief description of how to undertake the various evaluation components is provided below.

Self-report assessment of program effects: Classic self-report assessment involves surveying the target audience via door to door surveys, telephone surveys, mail-out surveys, or on-line surveys. Sample size depends on the statistical precision required, and the number of subsamples into which the full sample must be cut. In depth, but less objective, assessment of attitudes and values may also be achieved through focus groups, or content analysis of blogs and web activity. Campaigns which aim to change attitudes to certain government actions should have these set as explicit goals. Self-report survey questions can then be developed to assess relevant attitudes. For example, a campaign designed to reduce resistance to lower rural road speed limits could be assessed by asking respondents about the relationships between existing and lowered speed limits and road safety as well as other effects.

Measure of people's use of website/social media in response to the program: Various electronic methods of tracking website activity are available. It is worthwhile to track time on site, and locations searched, as well as number of hits. However, use of social media and its evaluation for road safety benefits are relatively new approaches and more background research is required before significant investment is made. Most importantly, a clear relationship between web activity and behaviour or attitude/belief change must be established.

Success in obtaining relevant changes in policy, law, or practice (by MAC or partners): The ultimate success of programs which aim to change attitudes to certain government actions is the delivery of the relevant change, such as reduced speed limits, increased fines, increased enforcement or stronger enforcement methods (such as point-t-point) and assessment of the crash and on road behaviour changes generated by these changes (not by the advertising per se).

Assessment of changes in crash, injury and deaths arising from relevant factors: Most Australasian jurisdictions have an excellent crash database for such analyses. It is important to focus these analyses on before to after changes with precise start dates for communication campaigns (ideally with control jurisdictions for comparison), to manage the risk of capturing broad downward trends which may be due to various factors including improved safety of roads and safer vehicles.

Benefit cost ratio calculation for the program: Costs should be the full implementation costs of the program or campaign being evaluated. Normal account keeping processes for the organisation should provide these. Benefits may be calculated a number of ways, but will be based on estimated crash, injury and death savings over the period of influence of the campaign. Crash cost may be assigned through willingness to pay estimates (ideally), real economic estimates or a mixed method such as is employed by Bureau of Infrastructure, Transport and Regional Economics (BITRE).

Objective measures of the relevant target behaviour on the road: On-road observations of the actual behaviour are the only effective option for obtaining these data. These may be achieved by utilising already available objective data collected by partners or via new data collection (e.g. Observers standing at appropriate roadside locations to conduct observation surveys of seat-belt and child restraint, or rest stop use; Use of automated measurement, such as loops to measure vehicle speeds; Analysis of existing data, such as catch rates in RBT enforcement (controlled for various confounding factors of location, time of day and day of the week).

Practical Implications

Good road safety communications are created as a mix of evidence, rigour, sound use of creative development, outcome evaluation, process evaluation, inventiveness, and good judgement. Claims of constant success in road safety communications generally reflect insufficient rigour in evaluation processes and interpretations. Even with sound evidence-based development, an expectation that every road safety communication program will succeed is not realistic.

The Strategy approaches evaluation not only a success demonstration exercise but also a learning opportunity for future improvements. However, it is reasonable to expect that with good judgement and careful evidence based planning and execution, a net overall road safety benefit will be achieved from road safety communications, with successful programs creating sufficient benefit to cover the costs of less successful programs. This paper may assist in undertaking strategically selected evidence-based and practical approaches to determine the efficacy of road safety communication programs.

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Glossary

Advertising refers specifically to a form of communication designed to promote a particular product or behaviour. It is usually placed in media outlets or billboards, outdoor, or convenience locations, and normally involves payment for placement of the advertising, though media may place some (charity or community service) advertising for free.

Campaign refers to a series of coordinated communication activities including advertising and marketing.

Communications refers to the active exchange of information and meaning, by any technique. In a road safety agency such as MAC, communications typically applies broadly to all the information which is exchanged with the public directly or indirectly through media releases, stories, and interviews with the media, or through other outlets such as workplaces or road safety champions in various organisations. Communication is used as an overarching term referring to all forms and processes of advertising, campaigns, marketing and messaging.

Marketing refers to the process of communicating the value of a particular product or action, which may be seen as selling that product or action. In road safety, actions may include sticking to the speed limit, and products may include safer cars, helmets, or child restraints.

Message refers to the content of communications, advertising or marketing. In many instances the intended message may not be directly apparent, but relies on the viewer's interpretation of the scene or text.

Outcome Evaluation assesses the extent to which a program or campaign delivers the final intended beneficial outcomes. For example, in the case of road safety, the intended outcome may be reduced trauma though road traffic crashes. An outcome evaluation would be focussed on changes in death or injury in crashes. In order to allow improved precision in cause-effect inferences, this may be narrowed to specific types or locations of crashes, such as drink-drive crashes, or crashes in rural areas of the state.

Process Evaluation examines the development and implementation of a program or intervention. It assesses cause and effect relationships between what is done and outcomes, and includes assessment of the process details against intended targets and outputs. In the case of a road safety advertising

campaign, a process evaluation may consider the extent to which the intended media uptake occurred, the access to the target audience achieved, and message take out as part of the processes by which the campaign could be expected to cause road safety benefits. For example, the message may have gone out on television but the intended audience may have received little exposure, or the audience may have seen the message but some sectors of the audience may have taken away an underlying message other than the intended message. Process evaluation is in significant part achieved through sound self-report surveys on the target audience.