Guidance for Effective Campaigns

Adapted from material prepared by the advisors, Global Road Safety Solutions for the SA Motor Accident Commission 2015.

Background: Road Safety Advertising is Unlike Commercial Advertising

In a number of ways, advertisements for road safety (and public health messages, generally) are not like advertisements for other products[1]. Most commercial adverting is based on an existing motivation and the purpose of the advertising is to move the consumer from one product to another: such as from laundry detergent A to detergent B, or supermarket C to supermarket D. Rarely do the ads promote the need for (motivation for) deodorant, cleaning power, toothpaste, food, or cars, *per se*. In road safety we are promoting the need for (motivation for) the recommended behaviour per se: the need to stick to the speed limit, wear a seat belt, or take a break from driving. The primary approach seen in commercial advertising is positive: the great value, incredible increase in attractiveness, or the life changing happiness which arises from using a particular deodorant, etc. There are few positives which are credible for road safety: presenting arriving safety has no impact because from a statistical iewpoint e this is the current norm anyway. Thus, commercial advertising is not a good guide.

One of the few areas of commercial advertising which does sometimes provide a relevant model is vehicle insurance. It is worth noting that when insurance companies depict crashes in their advertisements, the crashes are almost always an absurd joke and no-one is hurt. Examples on television in Australia in recent years include having birds take your wallet after a minor rear end collision, and having a dog jump through the sunroof. The key lesson here is that they use a low level of fear, not fear of a major crash.

The measurement of the effects of advertising is also different: crashes and casualty trends are influenced by many complex uncontrolled factors including weather, the economy, enforcement, vehicle safety, roads and roadsides. Crash numbers are also, in a statistical sense, low and thus must be considered over some time in order to obtain enough data to make meaningful comparisons. Self-reported behaviour is a valuable (though imperfect) tool for road safety campaign evaluation. For example, self-reported attitudes to speeding have established validity[2] and self-report is sometimes the only feasible measure.

Demonstrating that Road Safety Advertising Works

Rigorous scientific meta-analyses of multiple international studies of road safety advertising campaigns show genuine benefits of the campaigns[3]. The most recent and most

[1] Job, RFS (1987). Health education – motivation comes first. *World Health Forum, 8*, 476-477.

[2] Hatfield J, Fernandes R, Faunce G, Job RFS (2008). An implicit non-self-report measure of attitudes to speeding: Development and validation. *Accident Analysis and Prevention*, 40, 616-627.

[3] Elliot, B. (1993) *Road Safety Mass Media Campaigns: A Meta Analysis*. Canberra: Federal Office of Road Safety

Elvik, R., Vaa, T., 2004. *The Handbook of Road Safety Measures*, first edition. Elsevier, London.

comprehensive meta-analysis (published in the leading international journal in road safety: *Accident Analysis and Prevention* in 2011) showed overall clear benefits in terms of crash reductions[4]. Key points from the authors' summary are quoted below:

"A total of 119 results were extracted from the studies, which were reported in 12 different countries between 1975 and 2007. After allowing for publication bias and heterogeneity of effects, the weighted average effect of road safety campaigns is a 9% reduction in accidents (with 95% confidence that the weighted average is between −12 and −6%). …. Campaigns with a drink-driving theme were also associated with greater accident reductions, while some of the analyses suggested that accompanying enforcement and short campaign duration (less than one month) are beneficial. Overall the results are consistent with the idea that campaigns can be more effective in the short term if the message is delivered with personal communication in a way that is proximal in space and time to the behaviour targeted by the campaign."

Refer to Appendix 1 for further information.

Added complexity arises from consideration of the types of benefit which can be provided by road safety advertising. In the authors' views there are at least three types:

Type 1: Influences behaviours directly. Examples may include campaigns which enhance the effects of enforcement by increasing general deterrence, and so changes behaviour.
Type 2: Influences behaviours via attitudes.
Type 3: Generates changes in attitude or belief which allow more effective other actions such as reduced speed limits, reduced BAC limits, increased enforcement or increased penalties, which will change behaviours.

Each of these is considered below, with examples and evidence.

Type 1: *Influences behaviours directly (sometime without and sometimes followed by attitude change).*

The best examples of success come from the strongest advertising – that is advertising which signals changes in circumstances that appear to warrant changes in behaviour. Changes in circumstances typically involve changes in legislation or changes in enforcement.

Examples include the successes of the large advertising campaigns which accompanied the introduction of Random Breath Testing (RBT) in NSW, the introductions of compulsory seat belt laws in multiple states of Australia and elsewhere, and the recent re-introduction of mobile speed cameras in NSW. These were all highly successful advertising campaigns associated with new laws or new enforcement. The introduction of seatbelt laws with

[4] Phillips, RO, Ulleberg, P, Truls Vaa, T. (2011) Meta-analysis of the effect of road safety campaigns on accidents. *Accident Analysis and Prevention 43*, 1204–1218

effective campaigns steadily across Australian states was, for a number of states, the cause of the largest single annual drops in the road toll in history. The two relevant drops in the toll in NSW in the early 1970s due to advertising of seat belt laws and from 1982 to 1983 with the heralded introduction of RBT were the two largest ever for that state. The drop in Victoria's toll with the advertising and seat belt laws was the largest experienced. The drop in the road toll in NSW with the re-introduction of mobile speed cameras and the advertising which accompanied it resulted in a drop in deaths by 84, from one year to the next.

The key question is: How do we know that these were attributed to the advertising, or at least largely contributed to by the advertising?

It is clear that advertising was critical. The drops in the toll in each of the above cases started immediately, or in the case of RBT in NSW the drop actually started just before the start of RBT due to the huge communications campaign and paid advertising. The pattern of change proves clearly that the advertising was the primary initial factor. In some cases the law or enforcement changes had not yet started and in the other cases the psychological mechanisms by which the law or enforcement change could work would be much slower than the effects seen. For example, direct enforcement effects work through specific deterrence. This means that the effect is via creating change in each person who is caught, and thus the effects build quite slowly over time.

In many cases of successful advertising we can also show strong causal mechanisms for the changes arising from the advertising (as well as the enforcement). For example, the introduction of RBT in NSW was followed by (not preceded by) strong increases in social disapproval of drink-driving: with people moving away from seeing a drink driver who is caught as unlucky to seeing that driver as a criminal or potential murderer.[5] There were clear relevant behaviour changes. People changed their transport: queues for taxis went from a few people to long waiting periods and more taxi licences were needed; the large drop in the road toll was shown to be due to less drink-drive related deaths. [6]

In other cases, on-road observational surveys showed that seat belt use skyrocketed from the minority to over 90%; or with speed camera advertising mean speeds dropped.

This does not mean that the advertising without the law or enforcement changes would have been as effective, but the advertising and communications would have been just as effective for a short time. The enforcement is needed to back up the credibility of the advertising and to create specific deterrence.

[5] Job, RFS, Prabhakar, T., & Lee, S.H.V. (1997). The long term benefits of random breath testing in NSW (Australia): Deterrence and social disapproval of drink-driving. In C. Mercier-Guyon (Ed.), *Proceedings of the 14th. International Conference on Alcohol, Drugs and Traffic Safety, Annecy, 1997*. (pp. 841-848), France: CERMT.

[6] Job, RFS, Prabhakar, T., & Lee, S.H.V. (1997). The long term benefits of random breath testing in NSW (Australia): Deterrence and social disapproval of drink-driving. In C. Mercier-Guyon (Ed.), *Proceedings of the 14th. International Conference on Alcohol, Drugs and Traffic Safety, Annecy, 1997*. (pp. 841-848), France: CERMT.

More extraordinarily to most people, it is unlikely that the enforcement without the advertising would have been as effective as it was even in the long term. Again, this arises from psychological principles. If people are not warned extensively (through communications and advertising) they will almost inevitably continue with the same behaviours as before and thus mostly will only change with the direct experience of being caught, and quite possibly not even then. For example, if, after the seat belt law is introduced, a driver has many experiences of driving without a seatbelt without being caught, the driver learns that the chances of being caught are low, and thus may continue to drive without a seatbelt even after being caught. Starting with communications and advertising creates more community understanding, more community acceptance of the change, and because people start to wear their seatbelts before the law change, they have less chance of experiencing the low probability of detection.

It is worthwhile to consider why road safety advertising which delivers the changed beliefs about enforcement can succeed in producing behaviour change while advertising based on the fear of a serious crash does not appear to work.[7] The latter claim is controversial, and advertising campaigns based on high level fear (which depict serious or fatal crashes) are sometimes claimed to be effective. There are reasons for sustaining the view that these ads generally do not work. Claimed successes of high fear advertising have been poorly evaluated, or the ads have been predictors of strong enforcement. The reason for the success of low fear but not high fear advertising is credibility: most drivers believe that could be caught by police but most (being over-confident) do not believe that they will cause or die in a crash. (However, these ads should still be used and can be very successful for the third type of change- see below.)

Type 2: *Influences behaviours via attitudes*

This is the most obvious objective of road safety advertising, and is often seen as the only objective. However, these apparently obvious approached to advertising for road safety are the most difficult to prove successful.

Changing social attitudes can gradually lead to changes in behaviour. This is difficult to measure. Road safety education in schools is based on this type of change, as well as the more direct changes which can be achieved with young children in for example road crossing behaviour or bicycle helmet use. While the long term changes which may be created are inevitably confounded with many other changes over the school years of a pupil, there is clear evidence of attitude, knowledge, and belief change from such programs, in post-school surveys in NSW.

[7] Job, RFS (1988). Effective and ineffective use of fear in health promotion campaigns. *American Journal of Public Health, 78*, 163-167.

There are many claims of success from the high fear advertising campaigns. However, commonly critical analyses have raised deep concerns, including the timing of the reductions in deaths and injuries preceding the advertising, or the advertising being mixed with extensive enforcement based communications.

Type 3: *Generates changes in attitude or belief which allow more effective other actions such as reduced speed limits, reduced BAC limits, increased enforcement or increased penalties, which will change behaviours.*

Some road safety advertising campaigns may not directly change behaviour but still result is strong road safety gains by changing related attitudes and beliefs. It is possible to design these in advance on specific issues, and it is possible to show relevant changes in attitudes or beliefs, but it is quite difficult to show that these allowed the further actions which produced the road safety benefits. A few examples may help to show how this works. The 'No one thinks big of you' or 'pinkie' anti speeding advertising campaign in NSW was heralded as a huge success (winning multiple awards[8]), with sound evidence of social attitude change. However, there was no clear evidence for direct behaviour change. Nonetheless, these ads provide a greater community acceptance of speed enforcement, and NSW was able to expand the speed camera program including point-to-point, the re-introduction of mobile speed cameras (along with strong advertising), which did result in a large reduction in the road toll.

Similarly, MAC's anti-speeding campaigns which have focussed on social disapproval are likely to have assisted with the expansion of speed enforcement in SA (point-to-point cameras), and reductions of speed limit on some rural roads.

The personal over-confidence[9] of most drivers may explain the conundrum that drivers change their attitude but not their behaviour. For example, drivers may decide it is unsafe for

[8] Ad News National Awards: "Speeding: No one thinks big of you" ('Pinkie'), awarded Campaign of the Year for 2007.
Advertising Federation of Australia EFFIE (Advertising Effectiveness Awards) 2009: "Speeding: No one thinks big of you" ('Pinkie') awarded Grand EFFIE for Most Effective Campaign.
Advertising Federation of Australia EFFIE (Advertising Effectiveness Awards) 2009: "Speeding: No one thinks big of you" ('Pinkie') awarded Gold EFFIE for Best State Campaign.
Advertising Federation of Australia EFFIE (Advertising Effectiveness Awards) 2009: "Speeding: No one thinks big of you" ('Pinkie') awarded Gold EFFIE for Most Original Thinking.
Advertising Federation of Australia EFFIE (Advertising Effectiveness Awards) 2009: "Speeding: No one thinks big of you" ('Pinkie') awarded Gold EFFIE for Government, Corporate and Social Services.

[9] Most drivers believe that they are more skilled than average and believe they are less likely to cause a crash. See the following references:
Prabhakar, T., Lee, S.H.V., & Job, RFS 1996. Risk Taking, optimism bias and risk utility in young drivers. L. St.John (Ed.), *Proceedings of the Road Safety Research and Enforcement Conference.* (pp.61-68). Sydney, NSW: Roads & Traffic Authority of NSW
Svenson, O. (1981). Are we all less risky and more skillful than our fellow drivers? *Acta Psychologica, 47 (2)*, Pages 143–148.
Job, RFS (1990). The application of learning theory to driving confidence: The effect of age and the impact of random breath testing. *Accident Analysis and Prevention, 22*, 97-107.
Jonah, B. A. (1986). Accident risk and risk-taking behaviour among young drivers. *Accident Analysis and Prevention, 18*, 255−271.

others to speed and so accept speed cameras while still speeding themselves. The rollout of more speed cameras can then change behaviour.

Appendix 1: Estimation of Campaign Effects

The process undertaken in this Appendix is designed to provide an estimate of the likely benefits of paid mass-media communication campaigns on reducing crashes and trauma. This estimate is based on the following steps:

1. Review the scientific literature to assess the benefits of similar campaigns in published scientific evaluations of effects,
2. From credible scientific evaluations select those which are the most like those undertaken in broad features,
3. By reasonable extrapolation from the published evaluations, assess the likely impact of campaigns,
4. Provide an estimate of the contribution of campaigns to reductions in crashes and trauma.

Many evaluation studies of road safety communication campaigns have been published in the scientific literature or described in various reports. These have been of varying methodological rigor and thus scientific validity. In order to provide an overall assessment of the effectiveness of road safety communication campaigns several 'meta-analyses' of these evaluation studies have been conducted. Meta-analysis is a statistical technique used to systematically summarise the results of a group of individual studies with a common research hypothesis and sufficiently similar outcome measures that they can be grouped together for analysis. A meta-analysis involves reviewing all the relevant studies and:

- Determining the scientific rigor of the study, to allow it to be included in the subsequent analysis (if the methods are scientifically reliable) or excluded if not;
- Undertake the actual 'meta-analysis' which in effect treats each study as a subject in an evaluation of the evaluations, to determine
  - the average effects obtained, and
  - the factors and features of the studies which predict the amount of effect achieved;
- Undertake further analyses to assess the likely effects of certain other influences on the averages of the published studies. In addition to various statistical tests of the distribution of the data, the most distinctive additional statistical assessment in meta-analysis is the estimation of the effects of "publication bias." This refers to the well-established effect that studies which show positive effects are more likely to be submitted to, and accepted for publication by, scientific journals. Thus, the published studies do not provide an unbiased representation of the real effects of the action under scrutiny (in this case road safety advertising). Sound statistical methods exist for assessing the size of this bias and correcting for it.

A number of meta-analyses of the effects of road safety advertising have been published by a team of researchers from Norway, based on a global review of evaluation studies. This team

has published four peer-review papers or reports of their work (Delhomme et al., in 1999[10], Elvik & Vaa in 2004[11], Vaa et al., also in 2004[12], and the most recent: Phillips, Ulleberg & Vaa in 2011[13]), each with more studies added as they advanced. Thus, the most comprehensive available analysis is by Phillips et al., 2011, which contains 24 more scientific studies in the meta-analysis than the previous analysis. The only other recent systematic review was by Elder et al. (2004)[14] which assessed the effects of mass media campaigns against drink-driving only.

The Elder et al. review included a significant proportion of studies from Australia and New Zealand and found a median decrease in crashes of 13%. While reductions in number of crashes are less critical to road safety than reductions in the most serious crashes (fatal and serious injury crashes) the measure of crashes is most commonly used in these studies.

The critically relevant findings and features of Phillips et al (2011) are provided in brief point form below:

1. The meta-analysis uses all reported effects (on serious injuries, crashes, etc.). Multiple reported effects of each study were combined weighted by sample. Because the most common outcome measure is a change in crashes overall, this is the dominant outcome in the effects described.
2. When publication bias and other statistical factors are taken into account, the average (weighted average based on the sample size of the study) reduction in crashes associated with media campaigns was 9%.
3. The 95% confidence interval around the above 9% average reduction is a 6% to 12% reduction. This means that we can be 95% sure that the real reduction lies between 6% and 12%, and the best estimate is 9%. In general terms this is a small range for the 95% confidence interval indicating that the results are tight and can be treated with some confidence.
4. Certain features of campaigns were also identified in the comparisons of the effects of different campaigns as consistently influencing the size of the effect obtained, as follows (comment on the applicability of these effects to SA has been added where relevant):
    a. Local and regional campaigns has slightly more effect than national campaigns, with national campaigns averaging a 7% decrease;

[10] Delhomme P., Vaa, T., Meyer, T., Harland, G., Goldenbeld, C., Järmark, S., Christie, N., Rehnova, V., 1999. *Evaluated road safety media campaigns: an overview of 265 evaluated campaigns and some meta-analysis on accidents.* European Commission RDT programme of the 4th Framework Programme (Contract No.RP-97-SC.2235).

[11] Elvik, R., Vaa, T., 2004. *The Handbook of Road Safety Measures*, first edition. Elsevier, London.

[12] Vaa, T., Assum, T., Ulleberg, P., Veisten, K., 2004. Effekter av informasjonskampanjer på atferd og trafikkulykker - forutsetninger, evaluering og kostnadseffektivitet. *TØI Rapport. 727/2004* Institute of Transport Economics, Oslo.

[13] Phillips,RO, Ulleberg, P, Vaa, T. (2011) Meta-analysis of the effect of road safety campaigns on accidents. *Accident Analysis and Prevention 43*, 1204–1218

[14] Elder, RW, Shults, RA, Sleet, DA, et al. (2004) Effectiveness of Mass Media Campaigns for Reducing Drinking and Driving and Alcohol-Involved Crashes A Systematic Review American *Journal of Preventive Medicine;27(1):*57–65

b. Having a specified target group increased the benefit of the campaign (those without a target group averaged a 9% reduction, compared with 14% for those with a target);
c. Campaigns associated with enforcement (which was defined as campaigns which explicitly drew attention to enforcement) produced stronger crash reductions (10% versus 13%) whereas those noting only a law change did not produce stronger benefits;
d. The use of personal communication (defined as lessons and seminars, personal letters, etc.) had stronger effects;
e. The meta-analysis also assesses the effects of various media for message presentation, with the following results: television adds benefit, radio adds benefit, cinema adds benefit, newspaper presentation produced smaller benefits, as did leaflets, and roadside advertising was neutral. There is a risk that these effects are confounded by the campaign budget.
f. Campaigns highlighting the risk of detection showed improved benefits (by an additional 2%), and campaigns highlighting the risk of harm (crash, injury, etc.) showed weaker effects (by 5%). These effects are consistent with an earlier review suggesting that the use of high-fear messages (based on the fear of death or injury) are less effective than messages based on low fear (the fear of enforcement)[15].
g. Campaigns addressing drink-driving were most effective, and campaigns addressing speeding were least effective.
h. Campaigns which combine rational and emotional messages were more effective than campaigns which used only a rational approach. There were too few relevant studies to assess messages based on incentives or emotion only.
i. The duration of the effects being evaluated varied from study to study and the meta-analysis accepted the durations employed by the individual evaluations. Commonly, these are for the duration of the campaign though some assess longer term effects.

On the basis of the above analysis of effects, the following estimations of beneficial effects are applied to estimate the value of evidence based campaigns. They are considered to be effective to the extent of a 9% reduction in crashes generally and an allowance of 3% additional benefit was added for campaigns having an explicit target audience. Therefore the total effect can be estimated to be a 12% reduction in crashes, for good international practice campaigns.

[15] Job, RFS (1988). Effective and ineffective use of fear in health promotion campaigns. *American Journal of Public Health, 78*, 163-167.