

COMMUNICATING HIGHWAY SAFETY: WHAT WORKS

REPORT AND EXECUTIVE SUMMARY

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ABSTRACT

Few topics in transportation are of greater significance, now and in the future, than making today's roads safe for those who use them. This study aims to assist the formulation of policy by examining the empirical evidence currently available on the ability of several forms of communication efforts and activities to increase knowledge about and affect attitudes and behavior toward highway safety practices. The objective of this effort is to provide a comparative synthesis of what works and what does not in highway safety campaigns across a large number of topical areas that have a mass media component.

This was accomplished by conducting an extensive literature review to determine the current state of knowledge concerning what works and what has significant potential for wide use in future highway safety campaigns. An analytic framework for investigating highway safety campaigns was created. The framework includes (1) the types of media components, (2) the types of collaborations, (3) the context in which the campaign is intended to have impact, (4) the structure or procedural steps into which campaigns are organized, (5) the principles for what works in a campaign, and (6) the desired impact of a campaign on its target audience.

The report reveals 25 characteristics of successful communication campaigns, strategies that stand a chance of achieving changes in knowledge, attitude, and behavior. The actual impact of mass communication remains unproven because of a perceived lag in the development of adequate evaluation techniques. Education by itself has not generally resulted in significant changes in the behaviors targeted, but education of the public and advocacy groups has often helped enact necessary legislation, transmit knowledge about the provisions and penalties of laws in ways that increase their deterrent effect, and generate public support for law enforcement programs. Even in such cases, however, when enforcement is inconsistent, public compliance frequently decreases with time. Approaches to traffic safety that emphasize the need for long-term individual- and community-based measures are found to be especially crucial for addressing complex problems like drinking and driving that are determined by a myriad of lifestyle and psychosocial factors.

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the Iowa Safety Management System.

CTRE's mission is to develop and implement innovative methods, materials, and technologies for improving transportation efficiency, safety, and reliability while improving the learning environment of students, faculty, and staff in transportation-related fields.

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Principal Investigator

Lulu Rodriguez
Associate Professor
Greenlee School of Journalism and Communication
Iowa State University

Editor

Mark Anderson-Wilk
Center for Transportation Research and Education
Iowa State University

Sponsored by
Iowa Safety Management System
800 Lincoln Way
Ames, Iowa 50010
Telephone: 515-239-1169
Fax: 515-239-1891
www.iowaSMS.org

Prepared by
Center for Transportation Research and Education
Iowa State University
2901 South Loop Drive, Suite 3100
Ames, Iowa 50010-8632
Telephone: 515-294-8103
Fax: 515-294-0467
www.ctre.iastate.edu

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EXECUTIVE SUMMARY

Introduction

The proposition that public information campaigns can produce significant changes in attitudes and values on social issues has received scant support from the cumulative evidence of mass communication effects research in the past 25 years. Nevertheless, the public information industry continues to mount such campaigns, implicitly taking it on faith that they produce the desired effects. This faith is rarely put to the test.

This study reports on a meta-analysis of systematic tests of the effectiveness of information campaigns applied to highway safety. Few topics in transportation are of greater significance, now and in the future, than making today's roads safe for those who use them. In the developed world, highway crashes constitute a major public health problem; in the United States, they are the leading cause of injury deaths and the sixth leading cause of death overall. In the developing world, growing motorization will likely lead to similar consequences.

With regard to highway safety, the oft-quoted line from Walt Kelly's "Pogo" comic strip is apt: "We have met the enemy and it is us." It is the active involvement of the general public in operating motor vehicles that at once is responsible for much of the problem and greatly complicates the solution. This study aims to assist the formulation of policy by examining the empirical evidence currently available on the ability of several forms of communication efforts and activities to increase knowledge about and affect attitudes and behavior toward highway safety practices.

Objectives

This project has two objectives.

The first objective is to provide a comparative synthesis of what works and what does not in highway safety campaigns across a large number of topical areas that have a mass media component. First priority was given to the exploration of campaigns for accident prevention in highways targeting high- and low-risk audience segments. However, this literature review also included campaigns on other risk- and health- related topics that might have a bearing on the way highway safety messages can be successfully deployed. Therefore, to develop generalizations to answer the basic question "What works?" a comparative synthesis of campaign experiences in widely different topical areas was conducted.

This was accomplished by conducting an extensive literature review to determine the current state of knowledge concerning what works and what has significant potential for wide use in future highway safety campaigns. The synthesis contains strategies and tactics that have been found to be feasible and effective under specific internal conditions that governed the conduct of such campaigns as well as the general context under which the campaigns were designed and implemented.

The works cited in this report dealt with communication campaigns that are centrally organized around mass media (television, radio, print ads, and the like), although they also typically include community action and interpersonal approaches as well. While the discussion may include expert opinions, this report relied heavily on empirically based studies, especially those that demonstrated valid and well-documented research designs.

A comparative synthesis over such a wide range of topics and a broad variety of campaign strategies is expected to lead to the rethinking of conventional wisdom, to the development of new research hypothesis, and to the formulation of innovative strategies for campaign design.

The second objective is to provide the Iowa Safety Management System (Iowa SMS) with an annotated bibliography of empirical studies that will serve as baseline data that could be referenced for current and future projects that entail communicating preventive behavior to the general public.

In a separate appendix (available from Iowa SMS on request), published and unpublished literature on the goals, designs, activities, and outcomes of pertinent campaigns were compiled for review. Particular emphasis was placed on evaluative literature that extracted generalizations about campaign effectiveness from the standpoint of media professionals, government and private practitioners, outside third-party sponsors, and consumers.

Method

Development of an Analytic Framework

An analytic framework for investigating campaigns on various topics was first created. The framework includes (1) the types of *media components* (the delivery systems or communication channels for the campaign content), (2) the types of *collaboration* (among both individuals and organizations), (3) the *context* or environment in which the campaign is intended to have impact, (4) the *structure* or procedural steps into which campaigns are organized, (5) the *principles for what works* in a campaign, and (6) the desired level of *effects* of a campaign on its target audience. The principles for “what works” in this preliminary framework appear in the list of generalizations presented below.

1. Media components:

- Public service announcements (PSAs)—radio and TV
- News programs—radio and TV
- Information programs—radio and TV talk shows, interview shows, and documentaries
- Entertainment television programs—radio, soap operas, and TV movies
- Celebrity personal appearances
- Fund raising events
- Print media—newspapers, magazines, and booklets
- Posters
- On-line sources such as dedicated websites

- Feature films
- Radio—discussion and interviews
- Special events—contests, expositions, and awards

2. Collaborators:

- Mass media
- Government
- Preventive health care professionals
- Community/advocacy leaders
- Media experts and expert organizations
- Media trade/professional organizations

3. Context:

- Health care system
- Highway safety system
- Schools
- Family
- Workplace
- Government
- Community

4. Structure of campaigns:

- Setting objectives
- Evaluation research
- Collaborating individuals and groups
- Design
- Production
- On-going operation
- Formative evaluation
- Re-development
- Outcome evaluation

5. Principles for what works:

- Use multiple media
- Combine media with interpersonal strategies
- Segment audience
- Use celebrities to get attention and entertainment programs to sustain attention
- Provide simple, clear messages
- Emphasize positive behavior more than negative consequences
- Emphasize current rewards, not distant negative consequences
- Involve key power figures and organizations

- Take advantage of timing
- Use formative evaluation

6. Effects:

- Awareness
- Factual information
- Attitude
- Intention
- Behavior
- Continued use
- Maintenance

Comprehensive Literature Review

The research team began by identifying a number of campaigns in various behavior subject areas. Published and unpublished literature on the goals, designs, activities, and outcomes of campaigns were then identified for review. We placed particular emphasis on the evaluative literature that extracted generalizations about campaign effectiveness from the standpoint of mass media professionals, highway safety professionals, and outside third-party sponsors and consumers.

We used the following sources for the literature review:

- Principal university libraries at Iowa State University and the University of Iowa.
- Computer searches of the literature using standard search strategies. (The main output of these searches were empirically based journal articles and highway safety trade magazine reports, health and accident-prevention popular journals, and official government reports from agencies that deal with highway safety.)
- Inquiries to colleagues for unpublished or “fugitive” literature about communication campaigns and their media components.

We then reviewed the resulting literature base extensively. A preliminary synthesis culminated in our preparation of an annotated bibliography, with one- or two-paragraph annotations summarizing the intents, methods, and results of the various items included in the literature review.

Development of Generalizations

We developed a comprehensive computerized database containing the results of the literature review. We then analyzed this database to derive the generalizations.

Limitations of the Study

Meta-analysis is a method of summarizing the results of empirical studies within the behavioral, social, and health sciences. It can be understood as a form of survey research in which research

reports, rather than people, are surveyed. A coding form is developed, a sample of population or research reports is gathered, and each research study is “interviewed” by a coder who reads it carefully and codes the appropriate information about its characteristics and quantitative findings. The resulting data are then analyzed using special adaptations to investigate and describe the pattern of findings in the selected set of studies.

Meta-analysis is only one of the many ways to summarize, integrate, and interpret selected sets of scholarly works in various disciplines. It has an important, but somewhat circumscribed domain of applicability. First, meta-analysis applies only to empirical research studies; it cannot be used to summarize theoretical papers, conventional research reviews, magazine articles, opinion pieces, policy proposals, and the like. Second, it applies only to research studies that produce quantitative findings, that is, studies using quantitative measurement of variables and reporting descriptive or inferential statistics to summarize the resulting data. This rules out qualitative forms of research such as case studies, ethnography, and “naturalistic” inquiry. Third, because meta-analysis focuses on the aggregation and comparison of findings of different research studies, it is necessary that the findings be of the sort that can be meaningfully compared. *As such, this analysis is limited only to studies whose concepts have been strictly defined in order to allow for observation and measurement inherent in scientific inquiry.*

Overview of Findings

The assumptions, premises, and results underlying communication campaigns to enhance traffic safety are examined based on content analyses of program materials and documented on-site observations. Results reveal cause for guarded optimism in program planning, and a move toward multicomponent programs addressing multiple levels of social, psychological, and structural influences on driver behavior. Despite these encouraging trends, the programs generally lack a strong theoretical base and tend to view problems as located exclusively within the individual (e.g., Forster 1982). In addition, few programs provide adequate evaluations of their activities. In short, the actual impact of mass communication remains unproven because of a perceived lag in the development of adequate evaluation techniques.

For instance, in reviewing 24 published evaluative studies of mass media campaigns as a means of encouraging the use of automobile seat belts, only nine were found to meet minimal methodological criteria; and few were free from design problems. Overall, the present review provides little evidence to support implementation of “mass media only” programs to modify negative traffic safety behaviors, at least in their present form, but some changes have been demonstrated when media are combined with other community components. These programs generally use an integrated set of approaches involving mass communication, face-to-face program elements, community action, and small-scale education activities.

Though mass media alone probably cannot alter behavior, it can introduce broad health promotion concepts and accurate information on safe traffic measures and, in conjunction with other program elements, may be able to achieve lasting attitudinal and behavioral change. Examples drawn from campaigns to reduce drunk driving and to increase the use of child safety seats, seat belts, and motorcycle helmets illustrate how education (both public information and more formalized education) can help catalyze other actions. Education by itself, however, has not

generally resulted in significant changes in the behaviors targeted, but education of the public and advocacy groups has often helped enact necessary legislation, transmit knowledge about the provisions and penalties of laws in ways that increase their deterrent effect, and generate public support for law enforcement programs. This sequence has frequently resulted in major behavioral changes. Even in such cases, however, when enforcement is inconsistent, public compliance frequently decreases. Approaches to traffic safety that emphasize the need for long-term individual- and community-based measures are found to be especially crucial for addressing complex problems like drinking and driving that are determined by a myriad of lifestyle and psychosocial factors.

The literature review uncovers 25 characteristics of communication campaigns that succeeded and stand a greater chance of achieving knowledge, attitude, and behavioral change. The most important of these 25 characteristics are further examined, and the evidence of their significance is illustrated by communication efforts that employed them.

INTRODUCTION

The Behavioral Change Imperative

Although media campaigns have succeeded in changing behaviors, many have fallen short of their behavioral goals (Maccoby and Salmon 1981). Media campaigns often appear to be far more successful in conveying information and changing attitudes than in altering behavior. For years, researchers have descried “KAP gaps” associated with media information campaigns. Although targeted audiences appear more knowledgeable (K) about the issues at stake and claim to have favorable attitudes (A) toward the issue, their behaviors or practices (P) often remain apparently unaffected by the messages.

Explanations for the failures and the gaps abound and include the following: ill-conceived, poorly developed and poorly executed messages delivered by sources lacking credibility on the issues; inadequate exposure to campaign messages due to infrequent presentation and poor placement (endemic to PSA campaigns dependent on the good will of the media); hostile message environments, in which messages promoting the change are outnumbered by competing messages that overly and indirectly urge the continuation of existing behaviors; use of media unable to stimulate ample response opportunities; pre-existing attitudes and behaviors, many of which may be central to the receiver’s belief and attitudinal structures; insufficient training of the target audience in the skills needed to initiate and maintain the desired behavioral change; and inadequate linkages with interpersonal sources of influence (e.g., Atkin 1981; McAlister 1981; McGuire 1981). These explanations encompass the source, message, channel, and receiver variables traditionally considered as salient and active in any communication setting. Like other nonmediated communication efforts, campaigns may fail because of deficiencies associated with any one or a combination of these components of the communication process.

Where do media campaigns promoting highway safety fit? A seminal study by Robertson et al. (1974) painted a bleak picture for campaigns of this type. Employing an experimental design that made use of split-cable system, Robertson et al. examined the impact of six different seat-belt messages that aired nearly 1,000 times over the course of nine months. They found no effects: drivers who were exposed to the experimental channel made no more use of their seat belts than did those who were not exposed.

The verdict has long been delivered: Preventive behavior (e.g., seat-belt use and the designated driver concept to reduce drunk driving) is a particularly difficult goal to achieve through mass media campaigns because such campaigns asking an individual to change now by taking a preventive action (often conceived as unpleasant in nature) in order to lower the probability of some unwanted future event that may not happen anyway.

For example, research on the effects of an auto seat-belt campaign in Indiana found that while two-thirds of all Indiana adults were reached by the campaign’s messages, no increase in seat-belt use resulted (Gantz, Fitzmaurice, and Yoo 1990). Why not? First, even though every vehicle in Indiana is equipped with seat belts, most people regard them as unpleasant to use: they soil or wrinkle clothes and they are constraining, uncomfortable, or even painful to wear. Further, most respondents in the Indiana study perceived that the likelihood of their having vehicle accidents

was very low, so they rationalized seat-belt use as unnecessary. Some Indiana adults even believed that seat-belt use at the time of an accident would lower their chances of survival. As such, communication campaigns of a preventive nature, as most highway safety campaigns are, face special difficulties in achieving behavior change, at least compared with “non-preventive campaigns,” such as political ones or activities to diffuse and promote the use of a new product or service.

The failure to find effects in Indiana and other case studies has led many to seek explanations for the “null hypothesis,” factors that would account for the seeming ineffectiveness of information campaigns. Among the popular explanations have been these:

- There is a hard core of “chronic know-nothings” who cannot be reached by information campaigns (e.g., Williams 1994).
- A gain in information does not guarantee that attitudes will change correspondingly.
- The only persons whose attitudes will change are those who were predisposed to change anyway.
- Media campaigns can alter social attitudes only indirectly, through interpersonal influence.

In short, the inferences from previous studies were that media campaigns were apt to have few if any effects and when such effects did occur, they were likely to be among particular segments of the population that were primarily seeking reinforcement of their already existing attitudes and behaviors. Such “limited effects” hypothesis were by no means peculiar to campaign research; indeed, early studies of media effects on such diverse activities as childhood socialization, aggressive behavior, and voting behavior generally reached the same kinds of conclusions.

However, research endeavors into these same areas over the past decade have led to substantially revised conceptions of the kinds of effects media are capable of having on individual and social behavior. Perhaps the two most notable examples have involved the examination of the effects of violent media portrayals on the aggressive behavior of audience members; and the examination of the effects of political media content, especially during election campaigns, on citizens’ political cognition, attitudes, and behaviors. In both instances, although the gravity and extent of media influences are open to argument, the empirical evidence is clearly supportive of the media having the potential for doing more than simply reinforcing a psychological status quo among audience members.

The increased potential for media influence in contemporary society should not seem overly surprising. Although the underlying social processes remain largely open to inquiry, it is clear that mass media have taken a far more visible role as sources of information, and perhaps influence as well. The predominance and immediacy of television undeniably plays a part in all this, but also important are changes in the social and political structure of society itself. For various reasons, social and political institutions and processes are not as stable as they appear to have been before. Greater geographic mobility, the changing makeup and role of the family, and a lessening of the impact of traditional social ties and values—to name a few things—have

perhaps led to somewhat greater reliance on more “impersonal” sources of information and influence, such as mass media.

One difficulty found throughout the recent research on campaigns has been a lack of consistent conceptual or theoretical perspectives to guide problem development and design. However, as more data-centered evaluative studies continue to contradict the earlier limited-effects related hypotheses, more elaborate models will surely be developed. Furthermore, they are likely to be based upon the assumption that it is critical to investigate the contingencies under which different media messages result in different effects and at different points in time. That is, media effects are unlikely to be found *en masse*, or to be attributable to any one set of factors. Rather, it may be more important to determine which factors are most operative in given communication situations involving given audiences.

In the realm of highway safety, there is no getting away from the value of such efforts. After all, the road user was identified as a sole or contributing factor in 94% of crashes in the 1970s (Evans 1996). Such information supports the core traffic safety research finding that changes in driver behavior offer, by far, the largest opportunities for harm reduction. Indeed, a clear hierarchy of factors can be identified, and in this hierarchy human factors are far more important than engineering factors. Among human factors, driver behavior (what the driver *chooses* to do) has much greater influence on safety than driver performance (what the driver *can* do). Besides, efforts to effect behavioral changes often produce unintended consequences that offer additional benefits (e.g., reducing drunk driving likely reduces alcohol abuse problems unrelated to traffic). High technology innovations will make important transportation improvements, but none can reduce crashes by nearly as much as educational programs that provide people with incentives to adopt safe driving practices.

Fortunately, a number of more recent preventive campaigns, especially on health topic areas, have been relatively successful. Compared with the pre-1971 era of mass media health campaign experiences, when most evaluations showed that these campaigns failed, more recent ones have had greater chances of success for the following reasons:

- They have been based on vigorous, empirically validated social science theories, such as social learning theory, social marketing, the health belief model, elaboration likelihood model, the theory of reasoned action, social cognitive theory, and the diffusion of innovations.
- They have utilized formative evaluation research in order to improve the effectiveness of the communication campaign before it was launched or while it is under way.
- In comparison with earlier campaigns, they have had more reasonable objectives (e.g., a goal of achieving a 3% reduction in the risk of heart disease in a four-year campaign) that are more likely to be reached.

Modern-day campaigns can still fail, as the Indiana auto seat-belt campaign illustrates, but the likelihood of success overall is greater. Such optimism is probably one reason for the large number of mass media social marketing campaigns that are currently being carried out.

What Works: A Synthesis

Our own experience and the bulk of the literature reviewed here have led us to the following general programming/campaign principles, some of which are applicable to most persuasive settings, but most of which are more peculiar to highway safety ones.

Our research identified 25 generalizations about what makes for effective highway safety communication campaigns. While an emphasis has been placed throughout this study on mass media campaigns for highway safety, these findings are not limited to the topic, but may be applied in other campaigns, perhaps with certain modifications.

These generalizations have a common construction—they speak of characteristics of “more effective” campaigns. No assumption is made that one characteristic is more important than another, or that any one is essential for success. The generalizations were derived from both empirical and analytic work, and were selected on the basis of their appearance in some fairly clear form in a number of works reviewed. Because the following is a complete enumeration of pertinent findings, no one source mentioned all 25.

Generalizations about highway safety campaigns:

1. More effective campaigns use multiple media (television, radio, print, on-line channels, and so on).
2. More effective campaigns combine mass media with community, small group, and individual activities, supported by an existing community structure (this involves a “systems approach” to campaigns).
3. More effective campaigns carefully target or segment the audience that the campaign is intended to reach.
4. Repetition of a single message makes for a more effective campaign.
5. Campaigns for preventive behavior are more effective if they emphasize the negative consequences of current behavior. Arousing fear (at least in the context of highway safety) has been found to be highly to moderately successful as a campaign strategy.
6. Campaigns are more effective if they emphasize current rewards rather than the avoidance of distant negative consequences.
7. More effective campaigns involved in their design and operation key power figures and groups in mass media organizations, in government and nongovernmental bodies.
8. The timing of a campaign (when it is introduced, what else is happening during its operations, and the like) helps to determine campaign effectiveness.
9. More effective campaigns utilize formative evaluation techniques to appraise and improve the campaigns during planning and while they are in operation.
10. More effective campaigns set fairly modest, attainable goals in terms of behavioral change.
11. The use of commercial marketing and social marketing strategies has potential for increasing the effectiveness of a campaign.
12. More effective campaigns use educational messages in entertainment contexts (called the education-entertainment strategy).

13. More effective campaigns address the larger social-structural and environmental factors impinging on highway safety problems the campaigns are attempting to influence (e.g., basic driving literacy, lack of opportunities to be educated about the rules of the road).
14. More effective campaigns are coordinated with direct service delivery components (e.g., hot line numbers for information or counseling), so that immediate follow-through can take place if behavior change begins to occur.
15. Segmentation of campaign audiences by demographics is often relatively ineffective, compared with segmentation by psychographic variables based upon attitudes, values, and beliefs.
16. More effective campaigns direct messages to people linked to targeted individuals, especially individuals with direct interpersonal influence, such as peers and parents.
17. More effective campaigns choose their positive role models for social learning carefully, as these individuals may become negative role models through their personal actions (e.g., celebrities involved in anti-drunk driving campaigns who later are discovered to have substance abuse problems themselves).
18. If fear appeals are used for campaign messages, they should be coupled with mechanisms for reducing the anxiety that is created.
19. Public service announcements alone generally do not effectively bring about behavioral change. PSAs should be combined with other campaign activities to make a difference.
20. More effective campaigns use the news media as means of increasing their visibility.
21. More effective campaigns go in tandem with an aggressive enforcement strategy.
22. More effective campaigns address the existing knowledge and beliefs of target audiences that are impeding adoption of desired behaviors.
23. More effective campaigns communicate incentives or benefits for adopting desired behaviors that build on the existing motives, needs, and values of target audiences.
24. More effective campaigns focus target audiences' attention on immediate, high-probability consequences of safe driving behaviors.
25. More effective campaigns use pre-testing to ensure that campaign messages have the expected effects on target audiences.

Many of these points may already be familiar to the campaign professional. However, some of them require more detailed discussions to dramatize their value in the highway safety arena. An elaboration of some of these major generalizations follows.

A COMPENDIUM OF HIGHWAY SAFETY CAMPAIGNS

The following communication campaigns are described in this section. Because most of these follow an integrated approach, they are listed in alphabetical order.

- 70% by '92 Campaign
- Alcohol Safety Action Project (ASAP)
- Annual Eastern Winter Road Maintenance Symposium and Equipment Expo
- Click it or Ticket
- Community-Based Breakthrough Series on the Prevention of Motor Vehicle Injuries
- Decreasing Rail-Automobile Accidents in Michigan
- Getting to School Safely Program
- Highways or Dieways: Aggressive Driving Campaign
- Indiana Seat-Belt Campaign
- Kansas Driving: Safe. Not Sorry
- National Drunk and Drugged Driving Prevention Month (December)
- National Safe Kids Campaign
- No Delays and No Crashes in Work Zones
- No Zone
- Older Driver Evaluation Program
- Operation Lifesaver
- Prompting Patron Safety-Belt Use at a Supermarket
- Saving Lives
- Save Lives Program
- Selective Traffic Enforcement Program (STEP)
- Share the Road
- Thumbs Up Campaign
- Traffic School Online
- Vince and Larry
- Volvo's Seat-Belt Safety Ad Campaign for Blacks
- Work Zone Safety

Program: 70% by '92 Campaign

Implementing Agencies: National Highway Traffic Safety Administration (NHTSA) and state highway safety offices.

Objectives: To increase safety-belt use to 70% by the end of 1992.

Duration: Mid-May through mid-September of 1991 and 1992.

Strategies: Enforcement, public information, media events, and local-use surveys are components of the local program.

The two primary components of the “70% by '92” program are (1) “Operation Buckle Down,” a program designed to increase safety-belt use among police and to encourage enforcement of safety-belt laws; and (2) public information campaigns during the summers (i.e., mid-May through mid-September) of 1991 and 1992. Specific program activities designed to be coordinated at the community level include enforcement, public information, media events, and local-use surveys.

In February 1991, NHTSA regional offices and state highway safety offices initiated efforts to enlist community participation in the “70% by '92” program. Through September 1991, approximately 11,000 of the estimated 20,000 local enforcement agencies in the United States had been contacted; of these, approximately 3,700 agreed to participate in program activities. The impact of the program during 1991 was assessed by comparing changes in safety-belt law enforcement levels and safety-belt use rates during 1990 and 1991.

Evaluation Outcomes: Enforcement levels for 1990 and 1991 were assessed by examining citation rates (per million licensed drivers) reported through the Combined Accident Reduction Effort (CARE), a cooperative traffic-safety law enforcement effort sponsored by member law enforcement agencies in each of the 50 states and the District of Columbia. During 1990 and 1991, substantial increases in enforcement levels were documented for each of the three summer holiday periods; the greatest change occurred during the Independence Day holiday period (i.e., June 16–July 21), when citation rates increased 226% from 1990.

Changes in rates of safety-belt use were assessed by examining results from local, state, and national observational surveys. During the Independence Day period, pre-data and post-data from 186 jurisdictions in 30 states indicated safety-belt use increased an average of seven percentage points. During the Labor Day period (i.e., August 18–September 15) pre-data and post-data from 390 jurisdictions in 33 states indicated safety-belt use increased an average of four percentage points. Seventy-three jurisdictions submitted three sets of safety-belt use data: pre-Independence Day (June 16), post-Independence Day (July 21), and post-Labor Day (September 15). For these jurisdictions, the average pre-Independence Day/post-Labor Day use increased 11 percentage points, from 48% to 59%. During September and October 1991, state surveys indicated safety-belt use achieved a population-weighted average for all states of 59%.

Weighting these rates by annual vehicle miles traveled per state also indicated an average of 59%.

Safety-belt use rates also were assessed by analyzing data from the NHTSA 19-city survey, a trend analysis that uses quarterly observations of safety-belt use in 19 U.S. cities. The average use rate for drivers in these 19 cities increased from 50% during the first quarter of 1991 to 54% during the third quarter, immediately following the summer campaign.

Program: Alcohol Safety Action Project (ASAP)

Sponsoring Agency: The United States Department of Transportation (U.S. DOT).

Objective: Because seven percent of the 137 million drivers in the U.S. have serious problems in controlling their drinking and alcohol is involved in about 48% of the total automobile accidents that occur each year, this program aims to reduce the national incidence in drinking and driving.

Strategies:The U.S. DOT established 35 pilot projects involved with the enforcement of laws on drunk driving, judicial discretion in handling the arrested, comprehensive treatment and rehabilitation programs, the dissemination of information on drunk driving to the public, and evaluation.

Program: Annual Eastern Winter Road Maintenance Symposium and Equipment Expo

Implementing Agencies:Federal Highway Administration (FHWA) and state departments of transportation (DOTs).

Duration: Annually for two days.

Strategies:Snowplow operators, highway and public works officials, and airport managers from 36 states and 14 nations and who represented all levels of government, attend the symposium and exposition to check out the latest technologies and methods to maintain highway mobility and safety in inclement winter weather. Exhibitors display their wares, ranging from heated windshield wiper blades to robotic pothole-patching machinery. The exhibits included 54 large snow/ice-control vehicles and equipment.

In addition to the exhibits, the symposium included 18 educational sessions on a variety of technical topics, including automated bridge deck deicing, advanced weather systems technology; route optimization systems, automated vehicle-location systems, advanced snowplows, and Virginia DOT's "Smart Road" technologies. The "Smart Road" near Blacksburg, Virginia, is a state-of-the-art, full-scale research facility for pavement research and the evaluation of intelligent transportation systems (ITS) concepts, technologies, and products. Bus tours to the "Smart Road" were offered, and participants observed a variety of technologies

featured there, including the all-weather (snow, ice, and rain) testing capabilities provided by the 75 snow-making towers. The participants also had several opportunities to network and to “compare notes” about their experiences.

Program: Click It or Ticket

Implementing Agency: The North Carolina Governor’s Highway Safety Initiative, a partnership involving five groups: the Governor’s Highway Safety Program, automobile insurers and the Insurance Institute for Highway Safety, the North Carolina Insurance Commissioner’s Office, NHTSA, and the University of North Carolina Highway Safety Research Center.

Objective: To increase seat-belt and child-restraint use and to reduce other traffic law violations, including alcohol-impaired driving.

Duration: October and November 1993 and followed up by a second enforcement blitz in July 1994.

Strategies: Increasing seat-belt use, based on the Canadian model of a combination of intensive enforcement and publicity about enforcement, was emphasized during the first phase. Seat-belt checkpoints were held and citations for not using seat belts and not using child safety seats were issued at these checkpoints by patrols.

Evaluation Outcomes: Driver seat-belt use increased from 64% before the program to 80% in November 1993, dropped to 73% by May 1994, and then rose slightly higher to 81% in August 1994. Based on time-series analysis, it is estimated that 45 more fatalities and 320 additional serious injuries would have occurred during the six months following the program than were actually observed. Using a model based on the costs of medical care and emergency services, these estimated injury reductions translate to medical care cost savings of more seven million dollars. To gauge public knowledge and opinion, several random digit telephone surveys were carried out following the two program blitzes. At least 75% of the respondents were aware of the program, and more than 85% of the total sample were in favor of such programs.

Program: Community-Based Breakthrough Series on the Prevention of Motor Vehicle Injuries

Implementing Agencies: American Association for Quality (ASQ) and the Institute for Healthcare Improvement (IHI).

Objectives: To study, document, and disseminate quality-based approaches, techniques and tools that have been effective in improving health care systems. Along with teenage driving, collaborative teams tackled such issues as drinking and driving, seat-belt use, child restraints, fleet-vehicle safety, and injuries to elderly pedestrians and drivers.

Duration: 18 months, culminating in September 1977.

Strategies: Ten community teams were established, consisting of a health care delivery system or health care business coalition acting as lead organization, a local member of the ASQ acting as continuous quality improvement advisor, and volunteer subject matter specialists.

The partnership incorporated “quality tools” that have proved successful in other settings—in manufacturing, for example—and applied them in the community environment. It also used “change concepts,” a restatement of something that is a good idea known to work in other settings. The idea is that in order to change behavior people should have more appreciation of how change will affect the individuals who are choosing to change.

The community teams tested their change concepts by using the “plan-do-study-act” (PDSA) cycle. In the *plan* phase, a team defined the test, predicted the findings, and formed a plan to carry out the cycle. In the *do* phase, the plan was carried out, and observations and results were collected and documented. In the *study* phase, data were analyzed and compared with initial predictions. Testing methods were then changed or abandoned in the *act* phase.

Evaluation Outcomes:

- In Allentown, Pennsylvania, the team attempted to increase the use of car seats by developing an education program at the elementary school level. Adults, dressed as crash-test dummies, spoke to school groups about the importance of car seats, and dolls were presented at highway checkpoints to children who were fastened into restraints.

The program, however, had a negative effect. The measured percentage of children who were in restraints deteriorated after each visit by the crash-test dummies to the schools, leading the team to abandon the intervention as counterproductive.

- A Brookline, Massachusetts, team set out to slow the rapid increase of car crashes that involved elderly pedestrians and drivers. A community education plan was developed and proposals were made to the city to change street configurations at intersections where elderly pedestrians had been injured.

More people rode the Elderbus, an inexpensive alternative transit system, and the city’s traffic engineering department increased the pedestrian walk time by one to five seconds at key intersections.

- A Birmingham, Alabama, team sought to increase the use of seat belts by pushing for the passage of upgraded legislation and by initiating a public education campaign. Local media were contacted and 23 observation roadblocks were established with the aid of participating police chiefs to gauge seat-belt use and circulate fact sheets to motorists.

The tip sheet was expanded to a quarterly newsletter, observation roadblocks were repeated, and although set-belt legislation failed, plans were made to reintroduce it in 1998.

- In Burnsville, Minnesota, the team’s objective was to reduce motor vehicle crashes at four intersections along a county highway that had been identified as particularly dangerous. After signs were redesigned to clarify traffic routes, survey results showed that drivers had less difficulty negotiating the intersections.

While interventions were planned, a measurable reduction in crashes has yet to be recorded.

- The aim of a Dallas, Texas, team was to lessen vehicle injuries and deaths of infants and toddlers among a low-income, Hispanic population. The team formed focus groups among mothers to determine what types of intervention programs would be most effective. The team then developed community education and public awareness campaigns, distributed complementary car seats to parents, and performed spot car-seat checks.

The team won several grants to continue and expand its programs, but cultural differences sometimes hampered results. The team, for example, found that many parents viewed traffic accidents as fateful and therefore unpreventable events. Some families were reluctant to use complementary car seats that had not been blessed by a Roman Catholic priest.

- A Fredericksburg, Virginia, team, with the assistance of Students Against Drunk Driving (SADD), organized on-the-street checkpoints to educate teens on the importance of seat-belt use. A rock concert with a traffic safety theme was held. Team members lobbied the state assembly for more stringent seat-belt laws. A teen driver-safety manual was circulated to parents, and a parent-child contract was distributed, advising parents on how to develop a fair agreement on safe driving privileges.

The team was able to mark a decrease in the number of days between crashes involving teens and in the number of motor vehicle-related fatalities. Seat-belt use also increased, from 63% to 84% in four months.

- The Waconia, Minnesota, team produced a driver’s education parent resource manual that included a parent-child checklist for teenage driver education, a planner for licensure, a skills checklist, a practice-time log, a progressive privilege flowchart, and a vehicle use and operation contract to be signed between parents and the child.

Several of the team’s change concepts were adapted by the Waconia School District and a neighboring school district. The collaborative team made a presentation before the American Driver’s Training and Safety Education Association (ADTSEA).

Program: Decreasing Rail-Automobile Accidents in Michigan

Implementing Agency: MichiganDOT.

Objective: To decrease rail-automobile accidents in the state of Michigan.

Evaluation Outcomes: A formative evaluation was conducted with a survey of 891 randomly selected residents in Michigan. The formative evaluation was theoretically grounded in the extended parallel process model. The results of the study suggest that the majority of respondents engage in safe driving behaviors around railways. However, 10%–20% reported extremely risky behaviors such as trying to “beat the train” (labeled “risk seekers”). Further analyses revealed that the risk seekers were disproportionately male with strong sensation seeking tendencies to engage in new and novel experiences and to avoid boredom. The results suggest that high sensation seeking tendencies cause one to experience greater frustration and exhibit greater judgment distortions around rail crossings, which in turn, cause one to try and beat the train.

Program: Getting to School Safely Program

Sponsoring Agencies: NHTSA, in cooperation with the National Rural Health Association (NRHA) and other partner organizations.

Objectives: To increase the safety of students traveling to and from school and to enhance public awareness, the first step in changing habits and making rural roadways safe.

Strategies: As part of the program, resources were provided to persons involved in student travel, including parents, teachers, and crossing guards. A community action kit that includes fact sheets, examples of successful programs, and safety tips is available from NHTSA.

Program: Highways or Dieways: Aggressive Driving Campaign

Implementing Agencies: South Carolina DOT, South Carolina Department of Public Safety, and Fisher Communications.

Objective: To reduce accidents caused by aggressive driving behaviors.

Strategy: The campaign consists of PSAs that use dramatic footage of automobile crashes to illustrate the dangers of driving aggressively.

Evaluation Outcomes: This program has won three awards at the 2001 Columbia Addy Awards and has previously won 6 national, 14 regional, and 33 local Addy Awards. The American Advertising Federation sponsors the Addy Awards, the largest and most comprehensive awards competition in the advertising industry.

Program: Indiana Seat-Belt Campaign

Implementing Agencies: A state agency served as a coordinating body and worked with many government and private agencies and media outlets and hoped that more would get involved in the campaign.

Objective: To increase seat-belt use throughout the state.

Duration: The state campaign was loosely coordinated with no formal start and end points.

Strategies: A smorgasbord of efforts. Among others, the program features PSAs that aired on television and two television ads developed locally and sent to TV stations across the state. On the radio, one-minute jingles were developed for rock, contemporary, and country music formats. Using fear appeals, these warned listeners that seat belts were of no value when not worn. Billboards asked drivers and riders, “Are you sitting on your seat belt?” Through a variety of media, adults and children were reminded to “Buckle up for life” or told “Buckle up—it’s the law.” In short, message strategies were varied. The campaign included, at a minimum, straightforward information appeals as well as appeals to self-preservation and good citizenship.

Evaluation Outcomes: Most of a statewide sample of 811 licensed drivers recalled having been exposed to messages in the media about seat-belt use; relatively few recalled exposure to such messages elsewhere (e.g., at work). About half thought that the messages exerted little or no impact; among others, the perceived impact could be described as positive but subtle. Exposure to radio messages was the only media-exposure variable that related to self-reports of seat-belt use.

Program: Kansas Driving: Safe. Not Sorry

Implementing Agency: Kansas DOT.

Objectives: To reduce deaths and injuries from vehicle crashes on Kansas roadways. The goal is “zero deaths.”

Strategies: The program employed a wide variety of media, including television, radio, newspapers, and billboards. A special folder, containing the official state highway map and providing pockets for insurance and registration documents, has been printed with highlights of the “Safe. Not Sorry” message and key emergency contact information. It was distributed widely by Kansas DOT personnel, including distribution at the Kansas State Fair.

A key element of the campaign was information kits distributed to Kansas DOT field offices. There are eight different information packages, called “modules,” each dealing with a different driving situation. These modules contain a variety of communication tools for getting the safe

driving message out to Kansas communities. Module contents ranged from pamphlets and posters to videotapes and PowerPoint computer presentations.

Messages:

- “Back to basics” elements that reinforce the fundamental rules of the road, such as how to deal with mechanical breakdowns, and adjusting speed and driving techniques to changing weather and road-surface conditions.
- Specific driving situations commonly found around Kansas, from merging on high-speed freeways to making room for large, slow-moving farm vehicles on rural two-lane roads.
- Attention to growing problems such as aggressive driving, drowsiness and driver inattention. Materials caution about distractions ranging from cellular phones and hand-held computers to bad habits that have distracted drivers for decades, such as eating, reading or applying make-up while driving.

Evaluation Outcomes: The campaign was based on an extensive statewide telephone survey and interviews with focus groups of both urban and rural residents. The results revealed that Kansas drivers generally know how to drive safely. They also take pride in both their courtesy and their common sense behind the wheel, and believe these sets them apart from other American drivers. The survey and analysis of crash data, however, indicated that Kansas drivers do not always do the things they already know they should be doing. As such, the main thrust of the campaign was to remind drivers to follow the rules of the road, and to remember the value of using courtesy and common sense behind the wheel.

Program: National Drunk and Drugged Driving Prevention Month (December)

Implementing Agency: National Drunk and Drugged Driving Prevention Month Coalition, a national public-private partnership devoted to preventing impaired driving crashes.

Objectives: To reduce alcohol-related traffic fatalities to no more than 4.0 per 100,000 persons. To work for the passage and acceptance of the national 0.08% blood alcohol concentration standard for impaired driving, strict enforcement of impaired driving and minimum legal drinking age laws, sobriety checkpoints, and prompt suspension of licenses for persons arrested for driving while impaired.

Evaluation Outcomes: Most of a statewide sample of 811 licensed drivers recalled having been exposed to messages in the media about seat-belt use; relatively few recalled exposure to such messages elsewhere (e.g., at work). About half thought that the messages exerted little or no impact; among others, the perceived impact could be described as positive but subtle. Exposure to radio messages was the only media-exposure variable that related to self-reports of seat-belt use.

Program: National Safe Kids Campaign

Implementing Agency: A grass-roots effort affiliated with the Children's National Medical Center in Washington, D.C.

Objective: To reduce preventable injuries of all types in children 14 years of age and less.

Strategies: This nationwide injury prevention group has 127 Safe Kids active coalitions in 43 states and Washington, D.C. Many are run in connection with hospitals, health departments, emergency medical services, and the like, but any interested group may take part.

Local groups spread the word about safety in many areas, although bicycles are a primary focus. The "Safe Kids" coalitions hold safety fairs and "bike rodeos," during which children learn that a bike is a vehicle, not a toy, and are taught the "rules of the road." Volunteers teach children the proper way to wear bike helmets. The coalitions recommend that only helmets that have been tested by the American National Standards Institute (ANSI) or Snell Memorial Foundation be purchased.

The Alabama "Safe Kids" coalition, like many others, has worked with a bicycle gear outfitter to offer safety helmets at a discount. The source is Seattle Bike Supply, Kent, Washington, where marketing director Richard Wittenberg takes the subject of safety to heart. Wittenberg says the firm is involved with helmet programs in a half dozen states, and welcomes additional inquiries.

To emphasize the indivisibility of bike-and-helmet, many local "Safe Kids" coalitions provide sporting goods retailers with hanging tags to be tied on bicycles for sale. On the outside of the fold-open tag are the words "This bike is missing a part"—inside is a picture of a helmet. Vendors are agreeable to displaying the tags because more helmets may be sold—and the coalitions are pleased because it means more may be worn.

Evaluation Outcomes: A Seattle physician, Frederick Rivara, M.D., director of the Harborview Injury Prevention and Research Center, is credited with the fact that no other area in the country approaches Washington's King County in the number of protected heads. Rivara not only persuaded manufacturers to make the helmets in appealing bright colors, but he followed up with an award-winning televised public service announcement touting helmet use. Now, 56% of bicycle-riding adults in the Seattle area wear safety helmets, as do 38% of the children.

In Birmingham, Alabama, efforts resulted in coupons good for \$15 off on a \$40 sharp, "flashy looking" helmet being distributed to parents by pediatricians. In the first year of this effort, children's helmet sales "went from zero to about 3,000" in the Birmingham-Jefferson County area. The number of Children's Hospital admissions for bicycle-related head injuries is "beginning to see a downward trend."

Program: No Delays and No Crashes in Work Zones

Implementing AgenciesFederal Highway Administration and the American Association of State Highway and Transportation Officials

Objective: To improve safety and mobility in highway work zones.

Strategy: The dissemination of Work Zone Best Practices Guidebook, a guide to improving safety and mobility in highway work zones. The guidebook is a tool designed to save lives, reduce injuries, and enhance mobility in highway construction work zones. It assists construction workers by providing descriptions and points of contact for work-zone best practices in every stage of a project -- from planning and design through construction and maintenance. Transportation experts from around the country were surveyed for the guidebook, and their names appear as points of contact.

Program: No Zone

Sponsoring Agencies:Federal Motor Carrier Safety Administration (FMCSA), the Teamsters, and the FHWA.

Objectives: The “No Zone” campaign is a trucking-industry initiative designed to raise public awareness of a truck’s blind spots, where crashes are likely to occur. This safety initiative was designed to show motorists how to share the highway with the big rigs.

Strategies:Motor carriers (unionized carriers) and the Teamsters union co-sponsored a demonstration of the “No Zone” for Congress and staffers on Capitol Hill.

The National Private Truck Council (NPTC) also is taking an active part in the campaign. During its annual conference in Long Beach, California, in May 2001, NPTC-member Smart and Final, a warehouse grocery chain operating in the Western United States, unveiled a trailer it had painted with “No Zone” information.

Dozens of approved truck fleets volunteered to place vivid “No Zone” graphics on the sides and rear of their trailers. The decals provide clear pictures of the blind spots around tractor-trailer rigs. Vehicles with the graphics bring the “No Zone” safety message directly to motorists on the road.

The FHWA has signed up numerous private industry partners to participate in the campaign. In addition to the NPTC, FMCSA, and the Teamsters, supporters include motor carriers Roadway Express, Werner Enterprises, and United Parcel Service. Additional partners include the American Trucking Associations (ATA), Domino’s Pizza, Ford Motor Co., Goodyear Tire and

Rubber Co., the American Automobile Association (AAA), John Deere Insurance, 3M Corporation, and Greyhound Lines.

Program: Older Driver Evaluation Program

Implementing Agency: Ohio State University.

Duration: Began in February 1993 and is continuous and ongoing.

Objectives:To keep senior citizens independent and safe to pursue a healthy, active, and independent lifestyle through capable driving.

Strategies:Participants are referred to Ohio State University by physicians, families, or court orders or volunteer on their own. The program, which takes about three hours, tests vision and reviews medical history and medication. It also analyzes cognitive skills, as well as range of motion and reaction times. Some of the evaluation uses a driving simulator, but each client also goes on a road test.

Based on the philosophy advocated by AARP (formerly American Association for Retired Persons), the program supports graduated licensing provided it is based on individual abilities and not age.

The staff makes recommendations, which can include wearing different eyeglasses, driving only with a companion, installing adaptive equipment such as oversized mirrors, changing medications, and driver retraining. The program cannot revoke a license but the staff may suggest that a client give up driving. Medicare pays part of the fee. The program also has a grant from the Franklin County (Ohio) Office on Aging to help those who cannot afford the testing or do not qualify for Medicare.

Program: Operation Lifesaver

Duration: Began in 1972 in Idaho by Ed Schafer, a Union Pacific Railroad employee (now retired).

Sponsoring Agencies:NHTSA, in cooperation with NRHA and other partner organizations.

Objectives:To alert drivers to the danger of trying to beat trains at crossings. To curb the heavy incidence of deaths caused by collisions occurring in highway-railroad grade crossings.

Strategies:A network comprising 49 state affiliates whose headquarters is in Washington, D.C. The entity emphasizes the importance of education, enforcement, and engineering in its safety program. The group carries out an education program with local groups in 49 states. There were

5,396 of these collisions in 1991; 608 people died and 2,094 were hurt. These incidents occur most frequently in states with high numbers of crossings, including Texas, Illinois, Indiana, Ohio, and Louisiana. The railway companies spend in excess of \$100 million to make the crossings safe with lights, signs, and gates.

In the initial six-week program in Idaho, when police saw someone take a chance at a rail crossing, they gave a warning and placed a Lifesaver candy—provided by that company—in the person’s hand. After the initial publicity, police issued tickets to violators.

Today, each month, the public relations department for Norfolk Southern (Norfolk, Virginia), parent company of Norfolk and Western Railway Co, Southern Railway Co., and North American Van Lines, Inc., mail a clip sheet of about 30 pages in the name of “Operation Lifesaver.” It contains photocopies of newspaper stories about rail crossing crashes, safety education efforts, and Federal Railroad Administration Office of Safety data on crossing-collision deaths and injuries. With the newsletter, public opinion leaders often receive reproductions of posters that have been used over the years to try to reduce the number of crossing collisions.

Messages:

- One such poster, from the 1920s, shows a barefoot boy stepping onto what appears to be a dirt road to caution the four occupants of an open touring car that a locomotive is speeding toward an apparently unmarked crossing ahead. A nearby sign states: “More than 1,400 human beings killed. Twice that many seriously injured on railroad crossings each year. Do not be the next victim. Stop. Look. Listen.”
- A more dramatic poster from 1923 depicts a locomotive striking a touring car that has raced past an X-shaped railroad crossing warning sign. The legend reports that “in five years, 9,101 killed, 24,208 injured.”
- The mounting toll can be noted in a 1925 poster that reports 2,135 killed and 6,333 injured in the previous year, while a 1928 poster tells of 5,640 accidents with 2,371 killed and 6,613 injured in the past year. And another 1928 poster opens with a statement that is just as true today: “The peril of the [rail]road crossing has become a national problem.”

Evaluation Outcomes: Crossing fatalities in Idaho declined by nearly 39% in 1972, and “Operation Lifesaver” spread to other states. Today, it can be found in 49 states, Canadian provinces, areas of Mexico, and several other countries.

Program: Prompting Patron Safety-Belt Use at a Supermarket

Implementing Agency A supermarket in a southeastern city.

Objective: To increase safety-belt use among grocery patrons.

Strategies: Grocery carriers were briefly trained to prompt patrons—who received assistance with their groceries in a supermarket—to buckle up for safety. Each time a grocery carrier assisted a patron to his or her car, they were asked to say, “Have a nice day, and remember to wear your safety belt for a safe ride home” within three meters of the patron’s car. The prompts used were specific and polite and were delivered immediately before the desired behavior, and were designed to occasion an easily emitted behavior.

Evaluation Outcomes: During the initial baseline condition, 64% of patrons who had their groceries carried out of the store wore a safety belt as they exited the parking lot. During the initial personal prompt condition, 78% of patrons who were prompted wore a safety belt. During the return to baseline, safety-belt use returned to 63%. In the final personal prompt condition, safety-belt use averaged 74% for the prompted patrons.

Because of the simplicity of the intervention, such personal prompts could be used in a variety of settings to increase safety-belt use. However, it will be important to discover effective strategies for convincing managers and decision makers to implement the procedures as a long-term policy.

Program: Saving Lives

Sponsoring Agencies: Multiple city departments and private citizens in Massachusetts.

Objective: To reducing alcohol-impaired driving in Massachusetts.

Strategies: This community program tackled alcohol-impaired driving, related driving risks, and traffic deaths and injuries.

Evaluation Outcomes: Trends in fatal crashes and injuries per 100 crashes were analyzed for March 1983 through February 1993. In annual roadside surveys, safety-belt use among occupants of 54,577 vehicles and travel speeds of 118,442 vehicles were observed. Four statewide telephone surveys of 15,188 subjects (aged 16+ years) monitored self-reported driving after drinking. Comparisons of data for the program cities with data for the five years prior to implementation and with data for the rest of the state reveal reductions in all alcohol-related fatal crashes, declines in visible injuries, and a cutting in half of proportions of vehicles observed speeding and of teenagers driving after drinking in program cities.

Program: Save Lives Program

Objectives: To influence the behavior of drivers.

Strategies: Speeding and drunk driving awareness days, media campaigns, and business information programs.

Evaluation Outcomes: The program generated a 25% reduction in fatal crashes and a 42% reduction in fatal crashes involving alcohol. The proportion of vehicles observed speeding was cut in half.

Program: Selective Traffic Enforcement Program (STEP)

Implementing Agencies: Idaho DOT and the Boise Police Department.

Objective: To reduce injury crashes in Boise, Idaho.

Strategies:The program combined an aggressive traffic enforcement effort with a strong public information and education program designed to inform the driving public of hazardous road locations, the types of driver actions that made these locations unsafe, and the traffic enforcement that would be used to alleviate the problems at these locations. The information component portrayed the Boise Police Department as genuinely interested in increasing public safety, as opposed to simply citing motorists and collecting fines. STEP advisory messages were broadcast twice a day over three local radio stations.

Evaluation Outcomes:The program was associated with a significant (17%) reduction in the number of injury crashes; a non-STEP control area experienced no similar change. More important: the change in Boise was most dramatic following the delayed implementation of the STEP information campaign (publicity began a month after the start of the aggressive traffic enforcement). Besides the Boise STEP efforts, successful speed enforcement programs using speed indicators and photo-radar have been attributed to well-mounted public information efforts.

Program: Share the Road

Sponsoring Agency: ATA.

Duration: The campaign broke in early March 2000 and ran through year end.

Objectives:One goal of this highway-safety effort is to raise awareness of truck blind spots, as well as turning space and stopping distance requirements of commercial vehicles. According to ATA, this kind of information is critical since the majority of collisions between trucks and cars result from actions by the driver of the car. For example, 35% of all truck-related auto fatalities occur in tractor-trailer blind spots.

Strategies:A travelling road show made up of professional truck drivers who demonstrate how to share the road safely with tractor trailers in 25 cities. This replaces ATA's previous highway safety effort, "How to Drive," which the trucking lobbyist group sponsored in cooperation with the FMCSA's "No Zone" effort.

Message:

- One print ad shows a child looking out from a shattered car window. The headline and copy recap the high risk of death among youth in the community and the importance of seat-belt use. The tag line is “Volvo for life.”

Program: Thumbs Up Campaign

Objective: To increase seat-belt use through public information, education, and enforcement.

Evaluation Outcomes: Surveys were conducted at two paired Florida county project sites and one control site at the end of the three-month campaign, and at the project sites three months later. 30,930 observations were made. The project did not yield an overall increase in seat-belt use across the two sites. However, observed seat-belt use and the number of seat-belt citations issued increased significantly in one site. Data highlight two key problems: (1) failure to enact a plan to carry out the program and to track its progress; and (2) failure to recognize that “one-shot approaches” are unlikely to produce desired long-term changes.

Program: Traffic School Online

Implementing Agencies: TrafficSchoolOnline.com and participating states’ departments of motor vehicles (DMV).

Objectives: To offer an Internet-based traffic-school program as an option to traditional traffic school.

Strategies: TrafficSchoolOnline.com developed the Internet-based traffic-school program as an option to traditional traffic school. The program enables students to fulfill all of the coursework obligations from their home and then take the 30-minute final test at a local Kinko’s store.

Students in Virginia, for example, take the required coursework online and then go to any one of 27 Kinko’s copying centers in the state or in the District of Columbia, to take the final test.

With trained co-workers and rental computers equipped with dedicated high-speed Internet access, Kinko’s helps in giving the test. Co-workers assist in the set-up process, and in verifying the student’s ID with a driver’s license photo.

To participate in the program, the student drivers sign up for the DMV-approved course online and pay a course fee of \$49.95. The online interactive course combines text, graphics, and quizzes.

While the courses are the same as in a regular traffic school, the benefits of online learning is the convenience, students can learn at their own pace, and some may even do better in a nonclassroom environment.

Program: Vince and Larry

Sponsoring Agencies:The Ad Council (through the Leo Burnett Ad Agency) and the U.S. DOT.

Strategies:The popular campaign stars “Vince and Larry,” two well-meaning but comical crash dummies. Burnett created Vince and Larry after research showed previous seat-belt campaigns, like the “Buckle Up for Safety” jingle, had failed to personalize the message. “No one wants to think they could be in a deadly accident,” says Burnett account supervisor Jill Baskin. Making the spots fun would engage the viewer.

Evaluation Outcomes: The duo have helped increase seat-belt usage by 39% since 1986, saving 4,800 lives in 1990 alone. With 62% of drivers buckling up, the campaign is targeting narrower segments. One recent spot showed Vince and Larry in an MTV-like spot with heavy-metal band Iron Maiden. The campaign to promote seat-belt usage was named the best public-service campaign in 1992.

Program: Volvo’s Seat-Belt Safety Ad Campaign for Blacks

Sponsoring Agency: Volvo Cars of North America, Inc.

Duration: The campaign broke in early March 2000 and ran through year end.

Objectives:The estimated \$6 million print, radio, and in-school educational push will promote seat-belt use by children under age 14 because research has shown that car crashes are the leading cause of death among African-American children. Volvo aims its advertising campaign at African-American consumers because they are half as likely to use seat belts as other youngsters.

Strategies:The advertising buy is in targeted magazines and radio stations, including minority-owned media. The campaign includes posters for inner-city elementary schools, as well as ads on websites targeted at African-Americans. Volvo’s agency, Messner Vetere Berger McNamee Schmetterer/Euro RSCG in New York, handled the program.

Message:

- One print ad shows an African-American child looking out from a shattered car window. The headline and copy recap the high risk of death among youth in the community and the importance of seat-belt use. The tag line is “Volvo for life.”

Program: Work Zone Safety

Implementing Agency: Iowa DOT.

Objective: To remind Iowans to drive safely in work zones.

Evaluation Outcomes: In a telephone survey of 500 Iowans in six regions based on media demographic market areas across the state, “Expect the unexpected” was recalled by a higher percentage of respondents (41%) than the other message, “Get the picture. Listen to the signs” (23%). Of those who recalled these two messages, majority mentioned television as the medium where they received the information, followed by radio, newspapers, roadways signs and billboards, indoor signs, and magazines. TV was rated the most effective in delivering the messages, but radio recall is also significant. The evaluation showed strong support for advertising messages to remind people to drive safely in work zones.

IMPORTANT GENERALIZATIONS ABOUT SUCCESSFUL CAMPAIGNS

The following is a distillation of generalizations (first listed, then described) about successful campaigns outlined in the preceding section. Examples drawn from various highway safety campaigns are cited to demonstrate the value of each.

- More effective campaigns are based on problems and solutions identified by the publics they are intended to serve.
- More effective campaigns integrate and apply media effects, persuasion, and behavior change theories.
- More effective campaigns strive to keep the issues high on the public and media agenda.
- More effective campaigns use formative evaluation techniques to appraise and improve the campaigns during planning and while they are in operation.
- More effective campaigns sustain the momentum of behavioral change.
- More effective campaigns carefully target or segment the audience that the campaigns are intended to reach.
- More effective campaigns direct messages to people linked to targeted individuals, especially individuals with direct interpersonal influence, such as peers, parents, and other influential adults.
- More effective campaigns combine mass media with community, small group, and individual activities, supported by an existing community structure to create a “systems approach” to campaigns.
- More effective campaigns use educational messages in entertainment contexts (called the education-entertainment strategy).
- Public service announcements alone generally do not effectively bring about behavioral change. PSAs should be combined with other campaign activities to make a difference.
- More effective campaigns go in tandem with an aggressive enforcement strategy.
- Campaigns for preventive behavior are more effective if they emphasize the negative consequences of current behavior. Arousing fear (at least in the context of highway safety) has been found to be highly to moderately successful as a campaign strategy.
- Radio and billboards: the untapped media

More effective campaigns are based on problems and solutions identified by the publics they are intended to serve.

More successful campaigns demonstrate an ability to build upon existing networks and levels of knowledge, interest, and involvement in the problem within target communities. They look for general trends in the community consensus about problems and solution options but seek out and recognize differences among the various stakeholders. This approach obviously calls for extensive formative research before the program is planned or designed. If at all possible, local participants representing a wide spectrum of the citizenry are invited into this early formative research stage. The task of defining social issues, after all, is one of portraying their reality in a way that incorporates a variety of perspectives. As Glicken (1999) argues, increasingly the broader public is demanding a role in policy decisions that will affect their lives.

If sample surveys, focus groups, expert informant interviews, and other such techniques are to be used, local input, discussion, and negotiation can make such techniques more effective by posing questions in terms that will be more understandable to the public involved, and in interpreting responses in ways more appropriate to the affected constituencies. Information from these tools are shared with local participants and stakeholders, rather than used as “top down” strategizing mechanisms to attempt to sway public opinion and action one way or the other from the communication planners’ perspective. (For additional perspectives on such methodological issues, see in particular Hale 1993 and Kathlene and Martin 1991). Rather, the context should be a cooperative one with stakeholders looking for agreement on problem perception and upon a range of possible solutions, from “probable” to “wholly unacceptable.”

Most successful campaigns aimed at raising the level of seat-belt use have amply demonstrated the power of this strategy. In Georgia, “Operation Strap ’N Snap — Buckle Up or Pay Up” built public-private partnerships at the local, state, and federal levels to elicit strong commitments and resources from many people and organizations to enact legislation, inform the public on the benefits of wearing safety belts, and enforce the laws. In trying to get the secondary seat-belt law passed, a statewide, broad-based seat-belt coalition was established. Using information provided by NHTSA concerning the life and cost-saving benefits of wearing seat belts, the coalition sent letters to mayors of Georgia cities urging their support by signing a resolution endorsing mandatory safety-belt legislation. The coalition also organized extensive grassroots support by calling Georgia citizens and urging them to contact their legislators to vote in favor of the mandatory seat-belt law (NHTSA 2000).

In Michigan, a public-relations firm coordinated grassroots efforts to build political comfort for legislators to pass a seat-belt law by demonstrating local support through constituent letters, phone calls, and personal contacts. Coalition members and national partners (NHTSA, Air Bag Safety Campaign) attended editorial board meetings with major newspapers throughout the state, and received favorable editorials, which continued as the issue was being debated in the state congress (NHTSA 2000).

These efforts, in effect, directly involved local citizens by working with them through the whole process, in a sense moving from their “participation” in the project to “ownership” of it. To

arrive at this, Finnegan and Viswanath (1999) argue in particular for following models of analysis that have been successful in the public health sector, beginning with the defining of geographic, social and cultural and political outlines of a community, and following this with more intensive analysis, examining in particular the power and leadership patterns within a community. While such patterns may differ for highway safety interventions than for health-related ones, the basic premises and processes are the same.

Working *with* citizen groups to plan, strategize, and implement programs around their own informational, social, and transportation needs and capabilities may be far more effective than “targeting” publics to act in ways planners alone may believe relevant. McKee (1994) and Middlestadt et al. (1997) present process outlines adapting the traditional social marketing approach to such a participatory process. Granted, the technical skills of engineers and program planners are critical to the process, but decades of public reluctance that too often follow the “ideal” scenarios often proposed for highway safety should teach us that compromise solutions are better than none.

More effective campaigns integrate and apply media effects, persuasion, and behavior change theories.

Changing behaviors via communication intervention programs represents an enormous intellectual and practical challenge. In each audience segment identified (and the various subsegments within these segments), the preexisting knowledge, beliefs, values, motivations, perceived constraints, willingness to attend to and process campaign messages, and appropriate dissemination channels will be quite different. As a result, the campaign planner must identify the key knowledge, attitude, behavioral, or structural obstacles in the way of audience members’ adoption of the behavior. Strategies must be developed for overcoming these obstacles.

Theories of persuasion and behavior change may facilitate the identification of these obstacles and the creation of interventions to overcome them. For example, the theory of reasoned action is one of the most useful of the attitude-behavior theories. It combines attitudinal beliefs about a given behavior with perceptions of the expectations of others in the social milieu to predict intention to carry out a given behavior. It posits that peoples’ beliefs about the outcomes of a behavior (weighted by how they evaluate these outcomes) in combination with their perceptions and expectations of others in their life about their behavior (weighted by their motivation to comply with those others) will predict behavioral intentions. For example, determinants of intentions not to drink and drive would include beliefs about the outcome, such as reduced “happy hours” with friends, weighted by the relative importance of this decrease, and beliefs about expectations of others, such as one’s close friends, weighted by motivation to comply with each of these others. These intentions, in turn, will predict behavior. A variety of methods are provided for identifying relevant beliefs, influential others, and their degree of influence, and the relative weights for attitudes versus social pressure. These weights are used to create a predictive algorithm for behavioral intentions.

The major theories of behavior change have a variety of implications for message design as well. Social cognitive theory, for example, offers a structure for the creating messages, usually audio-visual ones, that model desirable behaviors and teach skills necessary to enact the behaviors. Attitude accessibility theory implies message should include cues from the context in which the behavior will occur. Several classic persuasion theories, as well as some more purely psychological theories, also suggest strategies for message design in communication campaigns consistent with an individual's "stage of change."

For instance, when one wishes to increase attention to the campaign issue among members of the target audience, agenda-setting, situational theory, and multi-step flow suggest an emphasis on mass media leading to interpersonal and organizational discussion. Protection motivation and parallel process theories prescribe ways to combine threat to gain attention and ways to mining threat to sustain attention. For example, messages intended to improve the safety behaviors of truck drivers, who tend to recognize the severity of truck accidents but who minimize their susceptibility, may effectively focus on narratives that give credible, contextualized, and emotionally affecting examples of similar truck drivers who received injuries.

The elaboration likelihood model (ELM) suggests that when audience involvement is low, as is it most likely to be when an issue is not yet salient, the details of media content may be less important than peripheral cues, such as the credibility and attractiveness of the message source, the number of arguments conveyed in the message, and the perceived overall quality of the message. Therefore, messages intended to build initial awareness should be very simple and use credible sources, while being dramatic enough to attract attention. To increase salience, one can maximize exposure to the message through widespread dissemination, repetition, and use of novel or vivid message elements, so it is more likely to come to mind. Or one can include exemplars, or testimonials or anecdotes, that may be more likely to be accessed as indicative of the severity or relevance of the campaign issue. A memorable story of a young and promising woman whose life could have been spared in a car had she been wearing a seat belt is likely to be better remembered than statistics about the incidence of such fatalities among teens.

Different theories typically focus on different problems in the persuasion and behavior change process. Therefore, they are potentially complementary. Using a combination of theories to inform a communication campaign design, nonetheless, remains an exception rather than the rule.

More effective campaigns strive to keep the issues high on the public and media agenda.

A phenomenon that helps to account for both the visibility and the success of many communication campaigns is the rise of the issue they advocate on the public and media agenda. Media coverage increases issue salience and availability in the minds of audience members. Media coverage is likely to do more. Coverage can stimulate discussion among friends, family, colleagues, and neighbors that is likely to influence perceived social norms and expectations concerning the behavior. Moreover, organizational entities, such as government agencies, non-profit organizations, and community groups may begin addressing the issue in their

communication activities, further increasing interpersonal discussion, as well as influencing perceptions of social and community norms.

To understand the larger social and environmental context in which a campaign operates, it has been suggested that campaign designers must analyze where a particular campaign topic sits on the public and media agenda. When an issue, such as highway safety, is high on these two agendas, “natural energy” is provided that can greatly help a campaign to be successful. While campaign designers have very little influence over the rise of an issue on the agenda, they certainly can benefit from using good timing to their advantage.

How can this be accomplished? Two pragmatic activities that could be done to keep an issue alive in the media agenda follow:

1. Maintain an aggressive public relations effort that links highway safety offices to mass media practitioners and gatekeepers. The flow of press and media releases should not be stopped simply because there is no topic that is amenable to a “straight news” format. Should there be no breaking news, editors generally appreciate feature stories that deal with safety issues that can easily be plugged into human-interest news holes. If the volume of such stories is considerable, safety issues can even be the subject of a special features page, complete with photo spreads and highly illustrative pages.

Michigan’s efforts to raise the seat-belt use rate is a highly illustrative case. The controversy surrounding passage of the new law drew media attention for several months. The “Click It or Ticket” message and signage design also drew media stories. Results of a telephone survey on traffic stops, race and belt use were covered extensively by print and electronic media; “big splash” public bucklings-up as part of the kick off of the law drew the media (examples: buckled up a popular singing group, an arena in Grand Rapids, the State Tree and a group of celebrities, and a Zamboni at a Detroit Red Wings theme restaurant). Campaigners also staged a heavily covered “birthday celebration” when the new law went into effect, featuring a huge cake, celebrating the 100 lives that the new law is projected to save each year. Actual “survivors” and “victims” stories continue to draw the media, especially in these persons’ own communities; maintaining continuous contact with editorial boards proved very effective in getting free, favorable stories out through the print media.

2. Always ride on the crest of breaking news or a “triggering event.” Studying media coverage of information technology innovations, Abbott and Eichmeir (1998) observed that for a number of reasons, coverage of new controversial topics begins at a low level, rises to an optimistic crescendo where the “hoopla” happens, then declines. The expectation is that the “hoopla effect” would operate in both elite and non-elite media, and that it could be predicted to occur across very different kinds of innovations, from health-related areas to highway safety techniques.

Following this model, for each peak in the media coverage of highway safety-related topics, one could thus discern three time periods: (1) pre-hoopla, characterized by a low level of coverage that focused mainly on research, scientific and political developments pertinent to the topic; (2)

hoopla, characterized by a steep rise in coverage largely generated by health scare, panic, and negative risk assessments that usually accompany crises, and (3) post-hoopla, in which coverage declines in volume as news people struggle for balance. While Abbot and Eichmeir's hoopla period was generally characterized by high optimism concerning an innovation, the coverage of highway safety issues can be triggered more by general alarm resulting from "preventable accidents," especially those that involve celebrities and other high-profile personalities. A cursory look at highway safety media coverage indicate that they "took off" as a result of unfortunate mishaps, topics that usually contain characteristics that make them highly newsworthy.

The idea that there could be a predictable cycle of coverage of certain types of problems or innovations was put forward by Downs (1972), who was concerned about patterns of coverage of environmental issues. In this "natural history" explanation, Downs predicted that there would be an "issue attention cycle" that may be considered as a component of the larger theory of agenda setting. As with other issues competing in the public arena, highway safety coverage peaks and declines as new public issues arose, competing and replacing it, until it gradually falls from the media view, and is revived again by a "triggering event." When such events occur, however, media gatekeepers are almost always in agreement that the issue is important enough to deserve prominent treatment and considerable newspaper space during these key moments.

In California, for example, both the implementation of the driving under the influence (DUI) statutes and the publicity and societal dynamics surrounding the creation of Mothers Against Drunk Driving (MADD) were found to be associated with subsequent reductions in alcohol-related fatal and injury accident rates. In combination with legislative effects, pre-legislative publicity associated with an emerging anti-drunk driving sentiment was largely popularized by the formation of MADD and drew public support for more stringent measures to combat drunken driving.

Indeed, the specific enforcement of drunk driving laws alone does not create an apprehension risk sufficient to influence the public's driving behavior. To increase the public's perception of apprehension risk, police enforcement activities must be supplemented by publicity. Publicity without sufficient enforcement is soon perceived as not credible; enforcement without publicity has too little impact on the drinking driving population to create a general deterrent effect.

Surveying the international drinking-driving literature, Ross (1987) cites several programs that appeared to be successful in the short run. Two kinds of publicity were associated with some of those programs: intentional coverage designed to heighten drivers' perception of apprehension risk, and unsolicited press coverage criticizing the new programs. The unsought publicity usually argued that the drinking-driving laws allegedly violated drivers' civil liberties. Given an adequate level of specific enforcement combating drinking and driving, it appears that the amount of publicity becomes an important determinant of a program's impact, regardless of whether that publicity is positive or negative.

More effective campaigns use formative evaluation techniques to appraise and improve the campaigns during planning and while they are in operation.

Most highway safety campaigns can be considered as social marketing efforts or approaches to directed change that are intended to increase the acceptability of new ideas to target audiences by applying marketing strategies adapted from commercial marketing to social issues, such as improved health and safe driving practices (LeFebvre and Flora 1988). One of the more formidable strategies of social marketing is the deployment of formative evaluation research methods.

Theory-grounded formative evaluation strategies have proven their worth over and over again in the literature review. As part of a comprehensive social marketing strategy, formative evaluation sets realistic parameters for progress assessment and identifies key variables that impinge on the adoption of a recommended behavior. A case in point is one conducted for a communication campaign to decrease rail automobile accidents in Michigan (Witte and Donohue 2000). Theoretically grounded in the extended parallel process model, the results of the study suggest that the majority of respondents in a survey engage in safe driving behaviors around railways. However, 10% to 20% reported extreme risky behaviors such as trying to “beat the train.” Further analysis revealed that these risk seekers were disproportionately male, with strong sensation seeking tendencies to engage in new and novel experiences and to avoid boredom. The results pointed to the fact that high sensation seeking tendencies can cause one to experience greater frustration and exhibit greater judgment distortions around rail crossings, which in turn, cause one to try and beat the train.

The results suggest that communication campaigns need to target the highly specialized group of drivers that routinely try to beat the train. These individuals appear to have become habituated to high levels of fear due to prior close calls with trains and frequent (and often frustrating) experiences with railway crossings (e.g., being blocked, having trouble seeing train, and being stopped at flashing gates but no train in sight). Communication messages need to specifically address these frustrations. Campaign materials also should feature men of all ages (age was unrelated to reported attempts at beating the train), as men were much more likely to engage in risky driving behaviors around railways than were women.

Most importantly, the results of this formative evaluation reveal that effective communication campaigns need to focus on high sensation seekers who appear to have a biological need for novel, new experiences and are motivated to avoid perceived dull experiences. Lorch et al. (1994) researched on high sensation seekers and suggest that effective communication campaigns must offer “equally appealing alternatives” to the risk behavior if they have to wait for a train to cross in order to satisfy high sensation seekers’ biological need for a thrill. Because they become easily bored and do not like to wait, high sensation seekers need some sort of intervention that engages their attention. For example, to decrease frustration, train schedules can be posted and average delay times can be listed so that drivers can plan their routes. Alternatively, games can be created to act as an equally appealing alternative behavior. For example, at particularly dangerous railway crossings, electronic systems can be set up where drivers are challenged to “test your judgment” skills by estimating train speed and distance; after

a brief time period, the answers would flash and then the system would ask another trivia-type question.

Another formative evaluation effort (Retting and Williams 1996) disclosed that red light violators, as a group, have significantly more tickets for moving violations, generally poorer driving records, are younger, and are less likely to use safety belts than law abiding drivers. The authors identified red light runners as a higher risk group that merits enforcement resources, not only because of the violation itself and its danger, but because of their higher risk characteristics in general. This finding is consistent with prior research that found substantially lower belt use rates among red light runners (Deutsch, Sameth, and Akinyemi 1980), and that high speed drivers had lower belt use rate and inferior driving records (Preusser, et al. 1988). Interestingly, no gender differences were found between red light violators and compliers (Retting and Williams 1996).

In Michigan's efforts to increase seat-belt use, formative evaluation identified two major concerns that impinge on seat-belt use among constituents: harassment (fear of discriminatory enforcement) and "Big Brother" (government intrusion into an area of personal responsibility). In message design, these two issues were separated from the safety aspect, but citizens were made aware that the enforcers understand that harassment is real and must be rooted out wherever found. The "Big Brother" concern was diffused by focusing on the rights of those paying the costs of injuries. Victim and survivor testimony also helped quell concerns about "Big Brother." In three focus groups composed exclusively of African American males, pick-up drivers, and the general population, campaigners also learned that "fear of a stop" is prime motivator for belt use among target groups (NHTSA 2000).

Formative and process evaluations provide baselines, progress checkpoints, and indicators of success or failure. This is likely the central failing of most highway safety information and education programs, and indeed of most communication campaigns. Without such criteria, we often continue to fly along blindly, assuming that a 10% gain in knowledge in one study is Holy Grail because it was "statistically significant," while having no point of comparison to other related programs. Careful qualitative evaluation of program management, strategizing, networking, internal and external communication audits, and the like can provide a mine of information that, when related to program outcomes, can do much in explaining degrees of effectiveness and in which areas. Various stakeholders in the community can and should play key roles in these evaluation processes (Patton 1997; Whitmore 1998).

The North Carolina initiative to increase seat-belt use is a classic example. This campaign, able to increase statewide seat-belt use to 80%, decided to focus on the characteristics of chronic nonusers. Their efforts indicated that nonuse of seat belts was associated with males less than 35 years old, the use of older vehicles (pre-1985), vehicles other than cars (especially pickups), and poor driving records. This hard-core nonuser population said they would not respond to higher fines but they would respond to driver license points. The results ushered in a strategy that combined publicity and enforcement campaigns with driver license points as a penalty for nonuse (Reinfurt, et al. 1996).

More effective campaigns sustain the momentum of behavioral change.

The ultimate target of most behavioral change campaigns is sustained change or maintenance. From a communication vantage point, the primary task seems to be reinforcement. It would seem that volume may be more important than specific content: the behavior must remain salient enough and its benefits or social normativeness clear enough to justify the costs of the behavior in money, pleasure, or convenience.

A key problem in many highway safety action programs is keeping the appropriate behaviors in motion once the major program or campaign stimuli have subsided. Rogers (1995) points to the need for continued reinforcement and self-evaluation by individuals to assure that a new behavior is still worthwhile, or worse, not causing unforeseen negative consequences. De Young (1993) deftly categorizes several behavioral change techniques according to their reliability in consistently instigating behavior change, the speed of its effectiveness, its particular appropriateness across a range of [highway safety] relevant behaviors, and perhaps most importantly, its durability over time. Such persuasive techniques as active prompting (by, for example, advertising), and material incentives (“bribery” to some) appear to be useful only in the short-term, while the (admittedly little) evidence for social pressure and material disincentives seem to provide more hope. Public commitments to changes of one form or another seem the most promising.

Assuming that audience members have already accepted the thrust of the message, messages that provide harder evidence with quantitative information may now prove more useful than in earlier stages. Researchers found that more explicit directive messages—in some respects comparable to messages backed by statistical evidence—are likely to be effective.

What is obviously going on here is a psychological range of internalization of attitudes or values, ranging from compliance to identification to internalization. Only when internalization of an attitude and congruent behavior is accomplished within one’s value system is long-term durable change likely to take hold. This is not unlike the failure one might expect from dependence upon more heuristic message strategies in campaigns dealing with potentially involving issues, as opposed to more elaborate, logical spelling out of the practices desired and the reasons underlying those.

Tied to this is the problem of the generalizability of appropriate behaviors across the almost befuddling range of highway safety issues. Apart from the likely small segments of the public who have internalized the highway safety ethic (or “literacy”), we are probably talking about relatively one-shot programs aimed at fairly limited issues, although not to say unimportant ones. It takes a fair amount of cognitive work to see the interrelationships among most of these issues, let alone nearly all of them.

More effective campaigns carefully target or segment the audience that the campaigns are intended to reach.

The concept of targeting is nothing new. Likewise, the use of formative research techniques to assess characteristics of target groups is fairly common. However, what has been lacking in highway safety campaigns is a model that uses strategic assessments to measure audience characteristics related to the adoption of remedial practices, and then identify, divide or segment the audience based on their needs and existing behaviors. In fact, actual needs are rarely used to identify or segment distinct groups within the larger population.

Highway safety program strategies often begin with the selection of a small geographic area defined by scope and scale. The people living in this target area are then offered various recommended practices often through broad-based information and education campaigns. Although most campaign implementers subscribe to audience segmentation, rarely is it done beyond such superficial levels as education, age, and income.

The bulk of studies on highway safety campaigns reviewed indicate that segmentation policy is often implemented along political jurisdictions or boundaries such as states, counties, or townships. Traditionally, implementing agencies assume everyone in the target area is the same and offer the same types of message themes to anyone in the area. This approach largely ignores the variation in institutional and infrastructure factors, prevailing driving behaviors, and personal characteristics of target groups, among others (e.g., Witte and Donohue 2000). Yet it is variation in these same factors that is often considered most salient when attempting to explain the adoption of recommended safe driving practices.

In addition, implementing agencies may respond to a situation by redefining the problem in terms of their own capabilities, further complicating the use of targeting principles in highway safety programs. Regardless of the nature or causes of a specific problem, agencies often create their unique definition of the problem—and the audiences purportedly affected by it—based on prevailing forms of available professional expertise and resources (Clark and McCool 1985).

The value of identifying specific audience groups that will receive differentially crafted messages for greater impact cannot be overemphasized. Segmenting the audience using psychographic characteristics received considerable support and discussion in a number of studies reviewed. Colon (1992) explicitly demonstrated this in a pilot survey that examined the correlation between belief in destiny and seat-belt use. In his investigation, he found that when belief in destiny was statistically controlled, differences in seat-belt use by race disappeared, indicating that racial differences in seat-belt use are statistically accounted for by belief in destiny. This motivation asserts that if one is strongly wed to the notion that the end of life is divinely decreed, efforts based on reason or logic will fall on deaf ears. As such, he recommends that efforts to increase seat-belt use should target minority groups rather than include them in broad-brush programs. Further, these efforts should take into account this important difference in motivation.

Because of the complexity of audience needs and limitations in financial and human resources, agencies often produce one message for distribution to every eligible person (Kotler and Andreason 1987). Yet the themes or content of these messages often lack a theoretical or empirical base. That is, they are designed on the basis of what program managers think people need to hear. These messages often end up being built around generalized themes. A more effective alternative to such generalized approaches involves narrowly defining target audiences, determining the content and quantity of information each audience needs through formative assessment (O’Keefe and Reid 1990), and then considering those needs in the context of the infrastructure and psychographic landscape of the environment in which they occur. Concerning young drivers who figure in more traffic-related accidents, such an approach suggests the following:

1. In designing safety education programs, young drivers should not be defined categorically as 16–20 year olds. Each age group has different interests, norms, and socially approved or legally stipulated rights. There is a difference between young drivers who drive their own cars and those who drive their parents’, brothers’, or sisters’. The latter group tends to drive with more passengers, creating situations ripe for inattention to driving. Some traffic safety programs should address this subgroup.
2. Traffic safety educators often look upon young driver accidents in a linear, causal way. For many collisions, this approach has merit, but a large number of accidents do result from in-car activities or driver mood. A theme worth stressing is that inattention to the road arising from passengers, loud music, mental pressure, or psychological escape, can lead to serious mishaps.
3. Traffic safety educators need to address the fact that routine activities in which young drivers engage, and which they consider safe, can be considered dangerous from another perspective. Rather than stereotyping teenagers, it should be stressed that drivers of all ages engage in such dangerous activities.

More effective campaigns direct messages to people linked to targeted individuals, especially individuals with direct interpersonal influence, such as peers, parents and other influential adults.

Social learning theory emphasizes how behaviors are acquired or modified by watching others in person or through mediated channels. Proposed by Bandura in 1986, this theory posits that when the models are attractive to or similar to those of the audience member, the behaviors are positively and visibly reinforced, and when the actions are clearly and intelligibly modeled, the likelihood that the behavior will be imitated by the viewer is increased. Self-efficacy can then be enhanced, and the likelihood of intentions turning to behavior is increased in two ways. One is by simply modeling and encouraging behavioral trials. A second is by providing explicit modeling of specific skills that are, in fact, required to successfully carry out the behavior. In short, social learning theory says that individuals learn by observing individual models that

perform particular behaviors. The models may be in every day life, or they may be depicted in the mass media.

Parents and peers are particularly potent role models. Safety experts generally agree that the best thing parents can do is set an example. Adult bicycle riders, for example, can wear helmets, put them on infants in carrier seats, and get children in the habit of putting on the protective headgear from the time they toddle onto their first tricycle. Routinely associating wearing a helmet with riding a bike, learned from parents and other influential adults, is the best defense against later peer pressure from those who may ridicule someone for wearing such protective devices.

Regarding seat-belt use, Hartman (1984) found that the basic pattern of parental influence follows a discerned path: parents' perceived susceptibility and severity behavior were strongly related to children's perceived susceptibility and severity beliefs and that such beliefs can be strengthened by parental training efforts. Indeed, in a survey of 256 middle-school students, Page (1986) showed that those who reported having seen one of their parents wear a seat belt were significantly more likely to wear their own seat belts.

Another potent modeling agent is that of peer groups. Two investigations of helmet wearing in both adults and children found that helmet use was consistent among companions (Dannenberg et al. 1993; Jacques 1994). This suggests the importance of working with peer groups to promote helmet use and encouraging helmet use as the norm among cyclers. In another prevention program that focuses on the friends and peers of high-risk teenage drivers using concepts of peer modeling, positive peer pressure, and assertive skills training, students promote, testify, and demonstrate their concern and ability to protect one another from unnecessary harm during a school wide assembly (Yates and Dowrick 1991). In classrooms, students develop realistic strategies and practice specific techniques to prevent a friend from drinking and driving. The program was evaluated over a three-year period. Questionnaire data from 4,000 seventh to twelfth graders indicate that most subjects were less likely to drive while intoxicated and more willing and confident to stop a friend from drinking and driving after the assembly.

Still another group that can considerably influence behavior is that of opinion leaders. An example are health authorities such as pediatricians who have considerable impact on parents who object that, "I never wore a bicycle helmet, so why do my kids have to?" The physician can point out not only the inherent danger of bicycle riding but also the fact that more drivers and increased traffic have added to the peril.

Study after study bore evidence to the power of these interpersonal sources and contacts. In exploring the effectiveness of legal and social forces in reducing alcohol-impaired driving over time, Berger and Marelich (1997), for example, demonstrated that greater knowledge of drinking laws and trends toward increased awareness of potential penalties coincided with external controls. Social pressures discouraging drinking before driving were identified as strong preventive factors, suggesting that state success at reducing alcohol-impaired driving is due primarily to the formation of moral inhibitions, socialization of preventive habits, and fear of punishment. In another study, Clark and Powell (1984) and McKnight (1986) show that a shift in drivers' attitude toward safer driving and controlled drinking occurs in interventions that involve peers than the fear arousal approach used in most safety campaigns.

The value of behavioral modeling has been proven using several methods of inquiry. In an experiment testing cognitive appraisal of performance capability in the prevention of drunken driving (Anderson 1992), participants were exposed to one of two public service announcements based on either symbolic modeling or persuasive efficacy information. Each message was designed to heighten participants' self-efficacy to prevent a friend from driving drunk. Participants in the symbolic modeling condition viewed a PSA that demonstrated how to dissuade a friend from driving drunk, and those in the verbal persuasion condition viewed an announcement that only advocated performing the task. A control announcement mentioned the consequences of arrest for drunken driving but contained no efficacy information. Follow-up interviews one month later supported the hypothesized ordered effects for sources of efficacy information: Symbolic modeling engendered greater efficacy expectations and behavioral intentions than did persuasive efficacy information.

Programs designed to involve alcohol servers in the prevention of drunk driving (e.g., Chafetz 1984; Chang, Lapham, and Barton 1996; Mosher 1983) also recognize the potent power of interpersonal influence. In this scheme, bar tenders and other alcohol servers are taught how to identify situations that lead to excessive drinking and how to intervene successfully in problem situations.

More effective campaigns combine mass media with community, small group, and individual activities, supported by an existing community structure to create a “systems approach” to campaigns.

The body of literature reviewed reveals that there is a need for research on strategies to foster informal social pressure not to drive after drinking. Outside of peers and parents, there are other agents within a community and the individual's general environment that can be tapped to strengthen prescribed remedial behaviors. Such informal programs as designated driver, safe ride initiatives, and changes in social host behavior may all contribute to declines in driving after drinking, for instance. Greater emphasis needs to be given to media advocacy strategies, including paid radio advertising, and to concerned organizations developing a common communications strategy that will advance the public policy agenda (DeJong and Atkin 1995).

Several research efforts have uncovered media effects on the social and cultural environment that surrounds individuals because the impact of the mass media on behavior can be mediated through other social institutions. In a hospital-based program, the High Risk Adolescent Trauma Prevention Program serving Baltimore, Maryland, subjects who viewed two films about drunken drivers and their victims, visited young patients recuperating from alcohol-related accidents, and participated in group discussions about drunk driving showed greater propensity toward seeking alternatives to drinking and driving on post-tests that lasted for 12 months (Dearing, Caston, and Babin 1991). In community prevention trials in California and South Carolina, alcohol-related accidental injuries and deaths were considerably reduced through comprehensive environmental activities and policy changes (Holder et al. 1996). A conceptual model describing causal relationships in these community projects identifies and interconnects five components: drinking

and driving, alcohol access, underage drinking, responsible beverage service, and community mobilization. Ways that these are addressed through local news media, law enforcement, adult and youth social services, retail industries, and others, are described, along with suggestions for environmental changes conducive to prevention.

The impact of driving while intoxicated (DWI) programming in New Jersey—consisting of a communitywide task force whose membership was drawn from local police agencies, alcohol treatment facilities, and public schools, an intensified public education and information campaign, and the use of roadside sobriety checkpoints—reveals that the programs have been successful in reducing traffic accidents and fatalities (Levy 1988). In three pilot programs designed to investigate and evaluate techniques to increase seat-belt use in three areas of North Carolina, telephone surveys of residents living in target areas revealed strong public support for the publicity and enforcement efforts and rates of belt use among front seat occupants increased in all areas. Each of the programs involved two weeks of radio, TV, and newspaper advertising on the importance of seat-belt use, three weeks of intensive enforcement including checkpoints and roving patrols concentrating on seat-belt violations, and extensive publicity about the enforcement. The programs also included incentives and rewards for seat-belt use (Williams et al. 1994). The effort, like the “Buckle up NOW!” enforcement program in New York State (Williams et al. 2000), demonstrates that high intensity enforcement programs can increase seat-belt use to very high levels with strong community support.

Another intriguing study in Vermont examined communities where drink gauges (wheels that calculate approximate blood alcohol content [BAC] based on weight and number of drinks) were disseminated to customers in bars and licensed beverage outlets. Bartenders and counter clerks were trained to demonstrate use of the calculators, and TV spots reinforced the messages. The study measured BACs at roadside surveys for both the program community and a nonintervention control community before initiation of the program and six months after initiation of the program. Prior to initiation of the program, there was no difference in BACs between the two communities. At the six-month follow-up, 5.8% of the nighttime drivers in program communities had BACs of 0.05 or higher, compared with an 11.1% of the drivers in the control community. This suggests that there is potential for comprehensive community programs to change social norms about unacceptable levels of drinking before driving.

More effective campaigns use educational messages in entertainment contexts (called the education-entertainment strategy).

Another topic our research has shown as having increasing impact on campaign design is the use of entertainment media and techniques, as focused in the “entertainment-education” strategy. This approach provides a unique energy source for helping to overcome some of the barriers to campaign success that have been identified in much recent research.

There have been limited attempts to use television to promote safe driving practices through information programs. Studies of PSA-based safety-belt campaigns indicate that these spot messages were ineffective in stimulating belt usage (Robertson 1976; Robertson et al. 1974). The

relatively more engrossing portrayals of driving on entertainment programs, however, means that such programs have a greater potential in influencing audiences. Frequent exposure to depictions of driving in entertainment programs may encourage behavioral modeling on the part of the viewers. They may initiate certain novel acts or feel fewer inhibitions regarding their own driving. Frequent exposure might also influence their perceptions of what type of behavior is appropriate and acceptable and their images of the behavior patterns of drivers with certain demographic characteristics.

Greenberg and Atkin (1983) conducted a content analysis that found few instances of immediate legal penalties for irregular driving acts (quick braking, quick acceleration, tires screeching, brakes squealing, weaving, stunt driving in which vehicles flip, spin, or leap in a dramatic fashion, leaving ground, leaving road, aggressive driving, speeding, and other illegal driving) that occurred more than seven times per hour on prime-time television. Projecting from their data, the viewer who watches just one hour of prime-time fictional series programming each evening would see more than 2,700 irregular driving acts, more than 250 acts in which people are endangered, and about 30 deaths and 50 injuries due to auto accidents; only 15 cases of seat-belt usage would be observed throughout the year, however. Most of the population would probably see more of these acts, since the average viewing levels exceed one hour of prime-time series and there is considerable exposure to TV movies and to programs outside of prime time.

Viewers' large-scale exposure to the depiction of driving suggests an array of social learning hypotheses that can be generated. Based on Greenberg and Atkin's content analysis, it could be suggested that viewers who frequently watch more action/crime shows are more likely

- to accept irregular driving behavior as "normal" driving behavior
- to believe that speeding is not a very bad driving behavior and to disbelieve that speeding will result in legal penalties
- to regard seat belts as unnecessary or not useful
- to reject the idea that irregular or dangerous driving will have serious consequences to people or property
- to believe the proper role of a male is as a driver and that of a female as a passenger
- to believe that irregular driving is especially acceptable on rural roads and not on hilly terrain
- to believe that vans, trucks, and sports cars are more acceptable vehicles in which to drive irregularly
- to believe that young people (in their twenties) do more irregular driving than those in other age groups

On the other hand, there are entertainment-education soap operas and related strategies programs that generally provide role models for the safety practice being promoted. These role models are usually attractive to the audience, and are rewarded for their positive behavior in the soap opera story line. Negative role models are usually also depicted, and are punished for their "bad" behavior.

For instance, until recent years, prime-time television series in the United States often showed characters doing a great deal of gratuitous drinking of alcohol. Today, in an era of heightened

awareness about alcoholism, the television industry has eliminated most drinking that does not contribute directly to a program's story line. It is hoped that the removal of drinking scenes will diminish the modeling of alcohol-related behavior by audiences. Thus we see that social modeling may be unplanned and spontaneous. Many media campaigns today seek to use social learning theory in a purposive way. For instance, the designated driver concept was depicted in more than 35 different prime-time television shows between 1988 and 1989 (Greenberg and Atkin 1983). As a result, many Americans learned about the designated driver idea, and many people used it. Campaign planners may also make recommendations to the advertising and entertainment media to decrease their misleading, glamorous portrayal of alcohol use and more accurately depict its sobering consequences.

Public service announcements alone generally do not effectively bring about behavioral change. PSAs should be combined with other campaign activities to make a difference.

Better campaigns have built-in training components, and examples of these litter the history of successful campaign literature. In Georgia's drive to boost seat-belt use, for example, the state's Occupant Protection Coordinator developed a three-hour child passenger safety (CPS) training program and administered it over a two-week period, training all patrol officers statewide before the first enforcement wave. The Governor's Office of Highway Safety successfully promoted traffic occupant protection strategies (TOPS) and Operation Kids, as Peace Officer Standards and Training (POST) was certified in the State Police Training Academy. The state produced a model training video on successful techniques for conducting multi-jurisdictional safety checkpoints. Implementers also provided occupant protection training for 75 municipal, probate, and state court judges (NHTSA 2000).

In New York, the state police conducted a diversity forum, brought in traffic safety leaders from the state police, NHTSA, and many representatives from diverse community-based organizations such as the Urban League and Hispanic Federation, in a roundtable discussion of how to protect lives and civil liberties simultaneously (NHTSA 2000). Such training programs for a host of key participants and target audience groups provided the knowledge base that makes any attempt at behavioral change highly "rational."

As highway safety experts point out, drivers' education alone does not teach young drivers how to become *good* drivers. Classroom testing and behind-the wheel training can provide fundamental lessons on safety issues, the rules of the road, and operating a vehicle, but it is experience that will produce the skilled and responsible driver.

More effective campaigns go in tandem with an aggressive enforcement strategy.

To effect change in a community, a good idea will link information with intervention. While young drivers may be aware that the use of seat belts will decrease the incidence and severity of motor vehicle injuries, something more than education and parental admonishment is needed to convince them to buckle up—stringent enforcement of a seat-belt law, for example. But enforcement without education simply makes people angry, because they might view the police, for example, as capricious, arresting people for reasons that people perhaps do not understand. A public information campaign that spotlights drunk driving checkpoints by police would add teeth to the education component.

A large number of speed enforcement efforts mention some form of public information or educational program, or publicity. None attributed a significant reduction in speed, speeding, crashes, or crash severity to any such campaign that was not closely tied to an enforcement or engineering program.

Traffic safety programs that include highly visible public information and education campaigns that accompany law enforcement efforts, such as STEP in Boise, Idaho, and the “Click it or Ticket” program in North Carolina (Williams, Reinfurt, and Wells 1996) have proven to both increase positive public impressions toward police activities and result in safer driving habits.

In states with safety-belt use laws, belt use typically increases initially, then decreases modestly in the absence of enforcement, and finally stabilizes at 40%–50% (Centers for Disease Control and Prevention [CDC] 1992). Public information and education programs without accompanying enforcement have been ineffective in changing these post-law stabilization rates. However, evaluation data from communities participating in the nationwide “70% by '92” program suggest that the enforcement/public information approach has the potential for increasing safety-belt use beyond the program goal of 70%. Assessment of statewide programs in California, Hawaii, Maryland, and Texas and demonstration projects in various Illinois, New York, and Texas cities indicate that gains of 10–30 percentage points can be achieved through highly publicized enforcement. In some localities, use rates of 70%–80% have been attained (NHTSA 1992). A pilot program to increase proper child restraint use conducted in Durham, North Carolina indicated that short-term gains can be achieved in proper restraint use and suggest that enforcement is a key ingredient (Williams, Wells, and Ferguson 1997).

Campaigns for preventive behavior are more effective if they emphasize the negative consequences of current behavior. Arousing fear (at least in the context of highway safety) has been found to be highly to moderately successful as a campaign strategy.

There is a competing body of work concerning the potential impact of rewards versus punishment as well as the timing of these incentives or disincentives on behavior change. There are those who argue for positive reinforcements and immediate rewards.

Many (e.g., Williams, Paek, and Lund 1995), on the other hand, argue that highlighting the negative consequences of unsafe driving in a campaign, such as the potential for a car crash and increase in car insurance were important factors in increasing concern for safe driving. Such studies follow a compelling body of evidence suggesting that increased enforcement and awareness of negative outcomes may be effective in promoting safe driving practices.

There is a substantial body of research that buttresses this contention. For example, to continue adherence to railway safety laws, Witte and Donohue (2000) recommend more traditional campaign messages that realistically and accurately portray the negative consequences of unsafe railway behaviors. Using real footage of train crashes or of interviews with those in train crashes and/or those left behind when loved ones were in crashes as in “Rescue 911” or “Cops”-type television shows would be an ideal type of campaign message for both high- and low-sensation seekers, they contend. This type of message would likely work because it would realistically and accurately show how errors in judgment contribute to serious harm (in order to overcome habituation by high-sensation seekers) as well as reinforce the efficacy of safety behaviors in avoiding accidents (for low-sensation seekers). For high-sensation seekers, these types of messages should be accompanied by equally appealing substitute behaviors that redirect any biological motivations to avoid dull experiences.

Similarly, Witte et al. (1993) found that perceptions of threat were important influences on bicycle helmet attitude, intentions, and behaviors when they field-tested the health belief model to promote bicycle safety helmets. In this case, parents who perceived greater threat of bicycle injury had more favorable attitudes toward safety helmets, had stronger intentions to purchase safety helmets for their children, were more likely to have already bought helmets for their kids, and were more likely to insist that their children constantly wear their helmets. Injury control specialists may thus find it useful to capitalize on perceptions of susceptibility and severity regarding bicycle accidents to promote safety helmet usage. However, it is critical that the effectiveness of safety helmets in preventing injuries also be emphasized. These findings suggest that before protective responses will be adopted, individuals must feel susceptible to a severe outcome.

The threat of losing one’s job may account for the reported high success rate (75%) of Employee Assistance Programs (EAPs), which may ferret out those with potential alcohol problems and mandate their attendance at treatment programs (Danovitch 1983). Evans, Neville, and Graham (1991) provide evidence that multiple laws designed to increase the certainty of punishment (e.g., sobriety checkpoints and preliminary breath tests) had a synergistic deterrent effect on deterring drunk driving. Threats of shame and of legal sanctions seemed to inhibit the inclination to drink and drive (Grasmick and Bursik 1990). Men and women responded equally to the threat of punishment from the legal system (threat of arrest, jail, loss of license, fine, or increased insurance), but women were much more responsive to social and internal controls (perceived disapproval from friends, feelings of guilt, and violation of a moral standard), according to Marelich, Berger, and McKenna (2000) who studied gender differences in the control of alcohol-impaired driving in California.

When using threatening or fear-arousing messages, interpersonal communication channels appear to work better than mass media channels (Witte et al. 1993). Threatening messages appeared to break through invulnerability defenses when given interpersonally but not when administered via mass media channels. Threatening messages given over mass media channels may simply be ignored by the audience, whereas threatening messages given interpersonally may force audience members to evaluate a given risk.

However, those who argue for positive reinforcements and immediate rewards also demonstrate methodological rigor and valid measurements. Evidence from these studies (e.g., Everett et al. 1996) suggests that motivation for a behavior is strongest when the behavior achieves multiple positive personal goals. Their investigation supports the motivational model and suggests that if adolescents are taught how wearing bicycle helmets achieves many personal goals (such as safety, positive self evaluations, social responsibility, bodily sensations, self determination, enhanced individuality, resource acquisition, and material gain), more students may wear them.

Likewise, some researchers decry that professionals have sometimes attempted to motivate behavior change by exaggerating the horrors of risky actions and their negative consequences. Championing the positive, healthy behavior practiced by most students, rather than the negative behavior of a few, can be a highly effective method of prevention.

Radio and billboards: the untapped media

When the Iowa DOT decided to evaluate its work zone safety campaign, it became apparent that TV was rated as most effective in reminding Iowans to drive safely in work zones. Radio, however, was rated second, although respondents aged 70+ years old were more likely to see newspapers as effective in conveying the message. Radio recall in this study is unusually good, indicating that campaign designers should consider ways in which radio might be tapped more effectively.

In examining the perceived impact of an information campaign about seat-belt use that coincided with the implementation of a mandatory seat-belt law in Indiana, Gants, Fitzmaurice, and Yoo (1990) found that exposure to radio messages was the only media-exposure variable that related to self-reports of seat-belt use. These findings have strong potential considering that there were no significant differences in recall of this message based on gender, number of licensed drivers in the household, or region.

In an effort to find techniques to raise belt use further in North Carolina, signs providing feedback to drivers on belt use rates were introduced in two communities, Asheboro and Greensboro (Malenfant et al. 1996). Feedback signs remind motorists about belt use and imply a constant and vigorous enforcement presence. The signs were prominently posted by the roadside at high-volume locations; belt-use information was changed weekly based on observational surveys. Observed daytime driver belt use in Asheboro increased from an average of 75% before the signs to 89% after the signs were established. At urban sites in Greensboro, driver belt use

increased from 80% to 86%. It is clear from these findings that feedback signs can be an important supplement to belt-use enforcement programs.

Indeed, radio and billboards may represent the central vehicles in the media mix used to promote seat-belt use and other safe driving behaviors because they offer immediacy; everyone listening to the radio and attending to a billboard advertising piece has the opportunity to act immediately, by buckling up or keeping tabs on the driving speed. For seat-belt use, radio and billboards appear to serve the same saliency and reminder function as aisle displays serve for products in supermarkets. Because they offer immediacy, radio and billboards represent a potent delivery vehicle for future auto safety programs.

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