

The role of public surveys in measuring program effectiveness and improving road safety

Paul Allen
G. William Mercer

Overview

Responsibility for reducing road-related injuries and fatalities lies in the hands of a large number of diverse groups. Collectively, the ultimate goal is to reduce casualty rates; individually, each group sets about accomplishing this task with different tools, different methods, and ultimately different immediate and measurable objectives. Thus, while casualty rates are the most significant measure of safety for a given jurisdiction, they are not and should not be the sole determinant of whether success is being achieved or not. Safety performance must be measured on more than one front, which is why acquiring data from other sources is so important. One type of data that is often overlooked in many jurisdictions is that derived from public surveys.

In the past three decades, the practice of polling has evolved and matured along with the technology that supports it. As a result, public surveys are now routinely used to help decision makers in almost every area of public policy development *except* road safety. For the most part, the three “Es” of road safety—enforcement, engineering, and education—are funded from the public purse through taxes and fees, yet these funds often are disbursed without the benefit of public advice or opinion. In the few jurisdictions where surveys are regularly used to measure and promote road safety (e.g., Australia, New Zealand, Europe, UK), the populations seem to have a more mature and consistent attitude toward road safety issues, partially evidenced by a media that is more engaged, more critical, or, at the very least, more interested in road-safety issues.

Organizations that use public surveys consistently do so to determine not only general attitudes towards road safety but also, and more specifically, to measure indicators such as driver experience with enforcement, their self-reported driving behavior, their perception of the likelihood of being detected and fined for contravening the rules of the road, and so on. Many of these surveys are conducted as part of independent research projects, while others form part of ongoing rolling poll and omnibus surveys that enable long-term trend tracking. The information extracted provides police, government, and other agencies with valuable data to help measure the effectiveness of their programs and to develop improvement strategies. If made available publicly, the information also generates more media interest, elevating the issue of road safety within the public consciousness.

Social change is slow, as witnessed by the twenty years required to change attitudes, knowledge, and behaviors around the issues of impaired driving and restraint device use. It is only through regular and consistent measurement that these changes can be tracked.

Introduction

“We need safer drivers, in safer cars, on safer roads.”—(EuroRAP 2005)

Making this vision a reality requires the application of an integrated mix of education, engineering, and enforcement to modify driver behavior. Whether it is educating and training new drivers, deterring dangerous driving through fines and sanctions, or providing drivers with the means to make better decisions through intelligent vehicle and highway design, influencing driver behavior is a primary objective for improving road safety. It has been so since vehicles first began rolling off assembly lines.

But do the more common measures to improve safety really work? Do stiffer fines and penalties actually deter dangerous driving? Is traffic enforcement effective or as effective today as it was twenty years ago? Do graduates of driving schools crash less often than drivers without formal training? Certainly, many research projects have been conducted by various agencies, but what is arguably missing is outcome-focussed evaluation supported by ongoing measuring and monitoring.

The challenge lies in linking the activity or output (e.g., speed enforcement, seatbelt advertising, sobriety checkpoints, etc.) to the desired outcome (e.g., fewer people speeding, increased seatbelt usage, fewer people drinking and driving, etc.). How each group defines success also adds a level of complexity. For instance, high-profile traffic enforcement blitzes on long weekends are now common throughout Canada, but the data that police release to the media pertaining to the number of charges is difficult to interpret from a safety perspective. Are more charges laid an indication of success (i.e., more people were caught) or rather a failure (i.e., more people were undeterred). The answer, of course, depends on one’s view of the role of enforcement. However, unlike charge rates which are highly susceptible to interpretation, public surveys can provide a reliable and accurate measure of deference to traffic law enforcement and to the rules of the road, the perceived risk of apprehension, and self-reported driving behavior. Similarly, tougher laws, fines, and sanctions are also assumed to possess a deterrent value; therefore, their true effect on driver behavior can be measured using surveys.

The historical difficulty of drawing a conclusive causal relationship between output and outcome at least partly explains why some generally accepted practices such as tougher fines and sanctions and conventional traffic enforcement are not routinely subjected to this level of analysis. This is in stark contrast with their more political counterparts, such as photo enforcement and red-light cameras, which typically undergo intense scrutiny. As a result, evaluation strategies built around measuring the individual effects of these conventional strategies are more or less ignored in favor of a high-level approach that links the collective efforts of the various groups to jurisdictional casualty rates—a relationship that no doubt exists, but that provides little value in the detailed measurement of the efficacy of policies, programs, and practices.

Relying on crash data to measure program effectiveness and overall road safety is a questionable approach based on the fact crashes are often underreported and unreliably reported (especially the less serious incidents) and the fact they are relatively rare occurrences. Thus, by simply looking at crash rates to determine the overall level of safety, proponents of this approach could be ignoring potentially effective programs and interventions. On the other hand, changes in knowledge, attitude, and self-reported behaviors can be measured with little difficulty and a high level of accuracy using surveys. Experience also suggests that in addition to monitoring public awareness and self-reported behavior, properly structured surveys can also help establish road-safety priorities and stimulate interest in road safety.

While public surveys are not without their limitations as an analytical tool, properly conducted, they add depth and context to existing program evaluations and performance-monitoring exercises. In the wrong or inexperienced hands, however, surveys can yield misleading or vague results (obvious or suggestive questions leading to desired but inaccurate results, for example).

Public surveys are most useful when a cross-section of question types are asked and when used in conjunction with other data sources, particularly as part of an evaluation of a specific program or initiative. The former ensures the data extracted goes beyond the superficial (e.g., “Of the 20 percent of respondents who say they very frequently exceed the posted limit, only one percent reported having been ticketed in the past two years,” etc.) and is therefore of value. The latter adds depth and insight to existing evaluation frameworks and often helps support the findings.

To ensure the credibility and legitimacy of public surveys and the data they produce, it is essential they be conducted by skilled practitioners with both traffic-safety program and measurement expertise and who have a broad understanding of core traffic-safety issues and programs. It is also important that the organization conducting the surveys is independent and objective, and ideally at arm’s-length from the programs being measured.

The financial, logistical, and political barriers to using surveys to measure traffic-safety programming are by no means insurmountable. Evidence from organizations worldwide suggests that routine, in-depth public surveys can become as institutionalized as the common measures in place to improve road safety and can become integral to the evaluation of individual initiatives and overall jurisdictional performance.

Public surveys and road safety

Public surveys and the practice of polling have become more prominent over the past several decades. In an analysis of public-opinion polling in Canada, for instance, Claude Emery pointed out that:

Public opinion surveys assumed an immense importance in Canada in the 1980s; not only did they become a familiar and seemingly indispensable feature of political campaigns—with various professional polling agencies being commissioned by different media outlets and political parties—they became an important aspect of public policy-making. Although governments have other means of gauging public sentiment—party activists, members of caucus, public servants and their numerous client groups, legislative debates, the print and electronic media—polls are now

acknowledged to be one of the most significant communication links between governments and the governed. (Emery 1994)

Not surprisingly, the amount of polling conducted on specific issues (e.g., education, healthcare, the economy, the environment, etc.) reflects their level of political priority. Unfortunately, transportation—and road safety specifically—do not rank highly, if at all, on most national public policy agendas. The polling firm Ipsos, for example, conducted a survey each year between 1990 and 2004 to identify the issues Canadians feel require the greatest attention from their leaders. Based on a “first mention,” “second mention” elicitation technique, the issues of healthcare, education, and the economy remained the top priorities year after year. It wasn’t until 2003 that the issue of “highway infrastructure” even made it on to the list where it ranked twenty-seventh out of thirty issues, yet was still deemed less important than “Mad Cow Disease,” which ranked twentieth (Ipsos 2004).

The role of public surveys

Despite its relative obscurity on the public policy front, road safety has become (and remains) an important issue for groups ranging from governments, police agencies, and insurance companies to advocacy groups, automobile associations, and injury-prevention agencies. Public surveys are a valuable source of information for all, many of whom either periodically or routinely conduct surveys. Arguably, the four most common reasons are to:

1. Increase and measure public attitudes toward road safety, new regulations, legislation, or countermeasures (i.e., red-light cameras).
2. Generate media and public interest.
3. Assist in establishing priorities.
4. Measure program effectiveness.

From a public policy perspective, surveys have been used more as a barometer to gauge public opinion for proposed government amendments to licensing laws and traffic regulations or new enforcement measures, rather than as a program evaluation tool. Public surveys are also used by state and national highway authorities (Federal Highway Administration, Transport Canada, etc.) to measure public satisfaction with the road network and perception of overall safety and to identify public priorities and preferred approaches to solving transportation problems.

Insurance companies use surveys not only to measure customer satisfaction and knowledge about product or coverage types and rating structures but also to glean information related to self-reported driving behavior, driving patterns, and driver awareness of the relationship between tickets and insurance premiums. In a survey released by Progressive Insurance in 2004, for example, “Ninety (90) percent of respondents said they drive over the posted limit, and 39 percent said they drive over the posted speed limit more than 25 percent of the time.” (Progressive 2004)

Surveys are also popular with advocacy groups and foundations wishing to not only accumulate knowledge but to influence public opinion, government, industry, and so on. One of the most recognized and successful advocacy organizations in the area of road safety is Mothers Against

Drunk Driving (MADD). In addition to their public awareness and education activities, MADD periodically sponsors public surveys to measure general awareness and attitudes towards the issue of impaired driving as well as the level of support for measures, such as tougher fines and sanctions, more sobriety checkpoints, and lowering of the legal BAC. MADD also routinely conducts surveys of the legislation, enforcement activities, and education campaigns, that they subsequently use to grade the performance of the appropriate province or state.

Benefits of surveys

Measuring performance

On a macro level, public surveys, performed consistently, can be very useful in measuring and tracking public attitudes, knowledge and behaviors, deference to traffic law enforcement, general awareness, and safety culture overall. The New Zealand Public Attitudes Survey, which has been undertaken periodically since 1974 and annually since 1994 by the Land Transport Safety Authority (LTSA), is an excellent example of how attitudes and behaviors can be tracked over time (LTSA 2005). (See Figure 1 and Figure 2.)

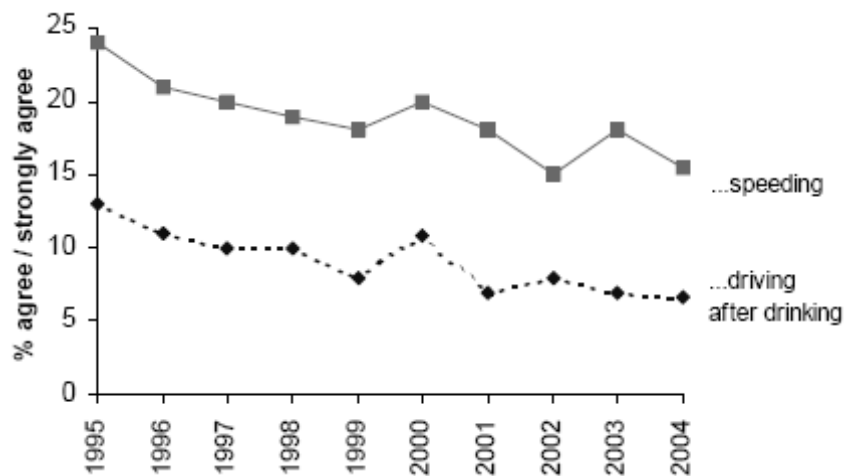


Figure 1. People who agreed that there isn't much chance of an accident if careful when... (Source of figure: LTSA 2005).

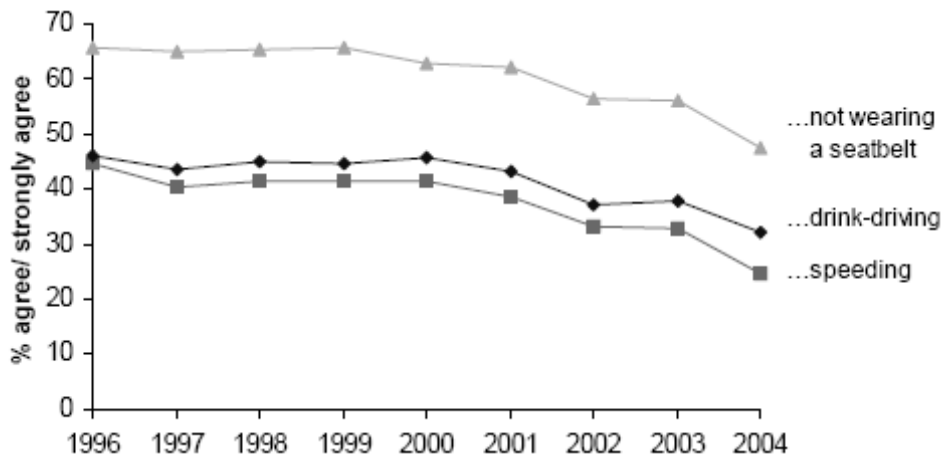


Figure 2. People who agreed that the risk of being caught is small when... (Source of figure: LTSA 2005).

On a micro level, public survey data can be used to evaluate the effectiveness of individual programs and initiatives and to enhance program effectiveness. The results of the European SARTRE (Social Attitudes to Road Traffic Risks in Europe) Project, which was conducted in phases between 1991 and 1997 across fifteen countries, provides an excellent example of how the findings can often contradict conventional wisdom. Among other discoveries, the SARTRE study revealed that in some jurisdictions, drivers who had been penalized for speeding during the three-year period prior to the survey were most likely to report that they exceed the speed limit more frequently than other drivers. Moreover, these drivers were least concerned about road safety, least supportive of more enforcement or harsher penalties for offenders, and more likely to warn other drivers about speed “traps.” (SARTRE 1998)

Surveys are also useful because they can provide data in a comparatively short time frame. Obtaining an adequate post-intervention sample of crash data usually requires a minimum of two years. Similarly, acquiring criminal code and highway traffic act offense data is a time-consuming endeavor more often than not.

Influencing change

Alan Andreasen, founder of the Social Marketing Institute in the U.S., notes that, “Good social marketers begin by saying: I need to know everything I can about those whom I am supposed to influence.” (Andreasen 1995) In this respect, public surveys play a vital role in the development and evaluation of effective marketing and public awareness campaigns. Arguably, limited market research prior to initiating campaigns is one of the reasons education and awareness programs have drawn criticism in recent years. In its May 2001 Status Update, which focussed on what works and what doesn’t, the Insurance Institute for Highway Safety (IIHS) stated that:

The focus has expanded from trying to prevent crashes by educating people to change their behavior. This approach was too narrow. And it failed because education alone almost never changes driver behavior... But when it comes to changing the behavior of drivers and others on the road, research findings often are ignored. Many programs are based on wishful thinking instead of science. (IIHS 2001)

Indeed, experience suggests that this is often the case when it comes to road-safety education campaigns—where not enough (or any) research (perhaps, surveys or focus groups) is conducted in advance to properly tailor the campaign to the intended audience.

Of course, much depends on the definition of “education.” Too often it is used to describe the learning of a few road-safety “facts” or slogans—“speed kills” or “don’t drink and drive”—when what it ought to be is the instilling of safety-related attitudes and beliefs that result in safety-related behaviors. That is, education in the broad sense, not just the memorization of dry facts. However, in order to educate, one must first know the current levels of knowledge, attitudes, and behaviors that make up the background for the education, and that is where survey work is essential. “To change, you must first know what you are changing.” Following that, differing approaches (e.g., persuasion or threat) and programs (e.g., advertisement or enforcement) can be attempted and change (or lack thereof) can be tracked, again using survey techniques.

In addition to supporting campaigns designed to influence driver behavior, public surveys can also prove useful for influencing policy-makers. Unfortunately, the historical landscape in this regard is dotted with more missed opportunities than success stories. In an article written for the *Miami Herald* in January 2005, the author quoted some of the concerns safety advocates have with automobile advertising and the seeming horsepower race. He notes:

“Activists and officials worry that decades of gains from safer vehicles are being diluted by a new crop of hot cars, hot drivers, and overheated advertising. So, they're urging the federal government to help and organizing a safety “summit” to put on the brakes. The activists point to the growing number of cars equipped with engines with 400, or even 500, horsepower. They are unhappy, as well, about ads for the newest high performance cars that emphasize speed.” (Miami Herald 2005)

In response, Jeff Runge, the Administrator of the National Highway Traffic Safety Administration at the time, was quoted in the article as saying, “I’m really not inclined to jawbone the industry into toning down their ads, but I would like them to be mindful of the messages being sent, particularly to younger drivers, about speed and performance.” (Miami Herald 2005) While it is possible that NHTSA’s position reflects popular opinion, it is also equally possible that it does not. The findings of a comprehensive survey may in fact reveal that there is strong public support for the U.S. government to more tightly regulate the advertising of automobiles, particularly with respect to speed and performance.

Legitimizing resource requirements

Growing populations combined with an ever-increasing number of competing priorities has inevitably lead to greater scrutiny of government and police expenditures. Transportation divisions within government, which are predominantly responsible for road safety, are certainly not immune to fiscal belt tightening; some would argue that they have, over the years, suffered disproportionately compared to other divisions, such as health and education. The same holds true for traffic enforcement: a function of policing which often declines during periods when police agencies are forced to conserve resources.

To help increase or simply sustain budget and resources, officials often use public-survey data to help justify departmental priorities and program expenses. In a comprehensive study of traffic

enforcement in Europe conducted in 2002, Mäkinen and Zaidel referenced the importance of using surveys to determine driver needs with respect to enforcement. Citing the findings of the SARTRE project, they concluded that, “Politicians, authorities, TLE officials, and professionals are sensitive to public opinion because the ability to secure funds and implement programs depends, in part, on this public support.” (Mäkinen, Zaidel, et al. 2003) More specifically with respect to enforcement measures and the police community, the SARTRE 2 survey identified a high level of concern for road safety, and widespread support for more police enforcement and harsher penalties for offenders. Mäkinen and Zaidel concluded:

“This is an important finding for the police who typically have an increasing problem with funding their activities—and have to balance their available resources with their perception of public and social needs as well as the views of the public and politicians.” (Mäkinen, Zaidel, et al. 2003)

Obviously the information gleaned from public surveys—no matter how supportive of more enforcement or programming, for example—does not guarantee approval of new resources or funds for new initiatives. However, if performed consistently and tracked over time, the information can help build the case for further funding or, at the very least, help minimize budget cuts.

Engaging the media

Public surveys can help to reinvigorate and prolong media interest in road safety, thereby stimulating public discussion and debate on various road-safety issues. Routine web searches for global media coverage of road safety reveal a disproportionate amount and intensity of media coverage between jurisdictions. In some jurisdictions, such as the UK, Australia, Europe, and some of the emerging nations, road safety is frequently highlighted in the press. Surprisingly, this is not the case in Canada or the United States.

Limitations of surveys and interpreting survey data

The three limiting parameters of survey data are sampling, reliability, and validity.

Regardless of how large or how demographically balanced (e.g., male to female, age, ethnicity, etc.) a survey is, its data will only reflect the responses of those who *agreed* to participate—the sample. That is, of course, unless researchers are dealing with purely objective, observational data, such as third-party observation of restraint-device usage. Participation levels can be increased to some extent using incentives, call-backs, and so on, but only those who want to express their views will participate; therefore, the results will reflect the biases of these cooperative participants.

On the other hand, pre- or post-survey sampling or “experimental group”/“control group” measurement can reveal changes in response data (assuming a well-constructed survey instrument with few changes in the measures used, unambiguous questions, clear response categories, etc.) Thus, reliable measures of the effects of campaigns like impaired driving road

checks or speed and seatbelt enforcement blitzes can be obtained. Unfortunately, without this sort of multiple sampling, the data from a one-off survey can be of limited value.

Even with a large, balanced sample and reliable measures, the question of data validity remains. Are the variables measuring what they are supposed to be measuring? We must recognize that people lie, exaggerate, misremember, are not fully engaged in the process, or just don't understand the question. Unfortunately, there is little remedy for these outcomes, which is why survey data, in a perfect world, would be supplemented by other measures, such as observational data (and visa versa). For example, a survey on changing attitudes on seatbelt use could be supplemented with data from an observational survey, while one on impaired driving could be supplemented with random breath sampling.

Types of surveys and survey questions

Types of surveys

There are several ways to obtain survey data, depending on the type of research being conducted. These include telephone, face-to-face, mailed questionnaire, online, and observational. The two most common forms of surveys are telephone and online.

Telephone-based surveying is the dominant method used within the industry as it provides reliable and representative results within a relatively short time frame. Compared to online and mailed questionnaire surveys, telephone interviewing allows skilled interviewers to probe for more information. Historically, telephone surveys are more generally accepted and have more perceived legitimacy among external audiences.

Online or web-based surveys are more cost effective than telephone surveys. They also offer grid style questions for cross-tab analysis and the flexibility to create simple or complex surveys with skip logic which reduces "drop out" rates by skipping non-applicable questions, randomizing answer choices which minimize "order bias" (the ordering of choices within a question can introduce an unintended bias). They are often considered more convenient as respondents can complete the entire survey at a time that is most convenient for them or even in stages. Online delivery is most effective when surveying specific subgroups or organization members where email addresses are known and the surveying organization can be recognized by the potential respondent. Examples include police officers, Automobile Association members, coroners, physicians, and so on.

Types of survey questions

Public surveys normally contain a mix of hypothetical and factual questions pertaining to the respondent's knowledge, attitude, perception, behavior, and history or experience. Infrequently, quasi-psychological measures are included, such as aggression scales, anxiety scales, driving style scales, and so on. Depending on the purpose of the survey and the intended audience, one or all of the varying styles of questions could be included in a single survey.

Table 1. Examples of surveys.

Organization	Title	Medium	Data				Frequency
			AP	K	B	HE	
Transport Canada	Public Perceptions of Road Safety in Canada (Transport Canada 1997)	Telephone	✓	✓	✓	✓	Infrequent
	Survey of Seatbelt Use in Canada Survey (Transport Canada 2006)	Observational			✓		Annual
Traffic Injury Research Foundation	Road Safety Monitor (TIRF 2001, 2002)	Telephone	✓	✓	✓		Intermittent
Land Transport, New Zealand	Survey of Public Attitudes to Road Safety (LTSA 2005)	Face-to-Face	✓	✓	✓	✓	Annual
Canada Safety Council	Aggressive Driving Survey (CSC 2003)	Telephone	✓		✓		Annual
International Association of Traffic and Safety Sciences	Traffic Safety Awareness Survey (IATSC 2005)	Mailed Questionnaire	✓	✓			Infrequent
AP – Attitude/Perception, K – Knowledge, B – Self-Reported Behaviour, HE - Collision History / Ticket Experience							

Table 2. Examples of questions by category.

Knowledge	Attitude	Perception	Behavior	History
What are the penalties for exceeding the posted speed limit by more than 20 km/h?	Does exceeding the posted speed limit increase the chance of being involved in a crash?	What are the chances of being caught by police for exceeding the posted speed limit by 20 km/h on a highway?	How often do you exceed the posted speed limit by more than 20 km/h on a highway?	Within the last year have you received a traffic ticket for speeding?
Can a driver be pulled over and ticketed for driving under the speed limit, but too fast for conditions?	How acceptable is it to travel 120 km/h in a 100 km/h zone?	What are the chances of being caught by police for exceeding the posted speed limit by 20 km/h within town?	How often do you exceed the posted speed limit by more than 20 km/h within town?	Within the last year have you been involved in a crash?
What are penalties for speeding in highway construction zones?	Do you believe enforcing the speed limit prevents crashes?	What are the chances of having a traffic ticket overturned in court?	How likely are you to reduce your speed in a highway construction zone?	Within the last year, how many times have you witnessed police conducting traffic enforcement?

Maximizing the value of public surveys

Structuring surveys for analysis

Surveys can afford the opportunity to obtain precise and clear measures if they are brief and well constructed. This means that every data point in every variable should have a clear purpose, either as a predictor or outcome measure. In turn, the analytical strategies and measures should be determined before the survey is completed. Bearing in mind that some jurisdictions require publicly-funded survey data to be generally accessible and that *Access to Information* or similar laws exist in many jurisdictions, poorly worded surveys (even those not initially intended for public consumption) can create unanticipated, counterproductive consequences. Researchers must be able to justify every variable and explain how it will be used in the analysis. Pretesting to eliminate variables without value and determine “holes” in the variable set can be also extremely useful.

When planning the survey and analyses, researchers should keep in mind that there will likely be both lay persons and experts interested in the results. Therefore, it is important that the variables and categories be constructed so that they can easily be laid out as cross tabulations, graphs, and charts when possible. If the intention is to use inferential statistics (chi-square, t-tests, ANOVA, correlation and regression are most common), distinction between statistical significance and predictive power should be kept in mind—large samples can show significance between variables with trivial predictive power.

Integrating surveys with other measures

Public surveys are most advantageous when used in conjunction with other data. Transport Canada, for example, conducts an annual national observational survey of seatbelt use (Transport Canada 2006). Trained observers stationed at predetermined intersections monitor and record the number of belted occupants in light-duty vehicles. Among the findings, the 2004/05 survey concluded that a higher percentage of female drivers wore seatbelts (93.9%) than male drivers (89.8%) in Canada, and that the rate of seatbelt usage in Canada is lower among the back seat occupants (84.9%) than among the front seat occupants (90.5%) (Transport Canada 2006).

A telephone-based survey on seatbelt use in conjunction with the observational data could delve further into the knowledge, attitudes, and behaviors of drivers with respect to seatbelts to answer other important questions that an observational survey cannot address. Are driving school graduates more likely to use seatbelts? Are drivers aware of the penalties associated with seatbelt non-compliance? Is a driver who was ticketed within the last year for not wearing a seatbelt more likely to report wearing a seatbelt at the time of the survey, and so on?

Establishing targets and benchmarking performance

Many jurisdictions have road-safety targets in place as part of high-level road-safety plans or visions. In Canada’s “Vision 2010” (Transport Canada 2004), for example, the general target is a

30% decrease in the average number of road users killed or seriously injured during the 2008–2010 period over comparable 1996–2001 figures, while in Europe the target is to halve the number of deaths on European roads by 2010 (EC 2003). Using questions and baseline data from existing surveys, authorities could develop targets based on respondent knowledge, attitude, self-reported behavior, and experience.

Similarly, surveys conducted across multiple jurisdictions (states, provinces, municipalities, etc.) provide the capacity for one jurisdiction to benchmark its performance against another. For example, officials in Jurisdiction A may discover that the perceived risk of apprehension in neighboring Jurisdiction B is much higher or that self-reported drinking after driving is lower. This might then prompt officials in Jurisdiction A to investigate the performance gap and modify their programs by incorporating the practices in place in Jurisdiction B. Data obtained from the SARTRE 2 survey conducted in Europe provides a unique example of how interjurisdictional survey findings can lead to different approaches.

The SARTRE project

The SARTRE project was specifically designed as a comparative study that would enable different jurisdictions to learn from one another. In the words of the authors:

“All countries in Europe apply similar countermeasures to improve the safety of road traffic concerning drivers’ behavior, everywhere speeding, driving under influence of alcohol, or wearing a seat belt are submitted to regulations. An interesting fact is that the various countries, beyond common aspects, obtain apparently different success in their policies to reduce road traffic risk.” (SARTRE 1998)

With respect to the issue of impaired driving and enforcement, the authors found considerable attitudinal differences between jurisdictions (See Figure 3), leading them to conclude that:

“The attempt to reduce the alcohol risk in traffic in Europe needs the consideration of national and cultural differences. Low alcohol limits correspond to awareness of alcohol risk in traffic and to desirable habits regarding drinking and driving. For those countries where there is little support for a low alcohol limit, an increase of the awareness of the accident risk at low blood-alcohol concentrations is necessary.” (SARTRE 1998)

The SARTRE survey also revealed considerable differences in behaviors and attitudes related to speeding and support for different countermeasures across jurisdictions. The apparent differences between jurisdictions led the authors to conclude that:

“Differences identified between countries may mean that it is possible to find examples of ‘good practice’ (and similarly ‘bad practice’). This might give indications for the less effective countries how they might improve their speeding problems. The results suggest that enforcement of speeding could be improved in a number of countries.” (SARTRE 1998)

The SARTRE project provides a unique example of how surveys can be specifically used to identify relevant inter-jurisdictional differences in attitudes and behaviors. Once documented, this information can lay the groundwork for jurisdictions to identify and subsequently share best-practices in order to improve their overall safety performance.

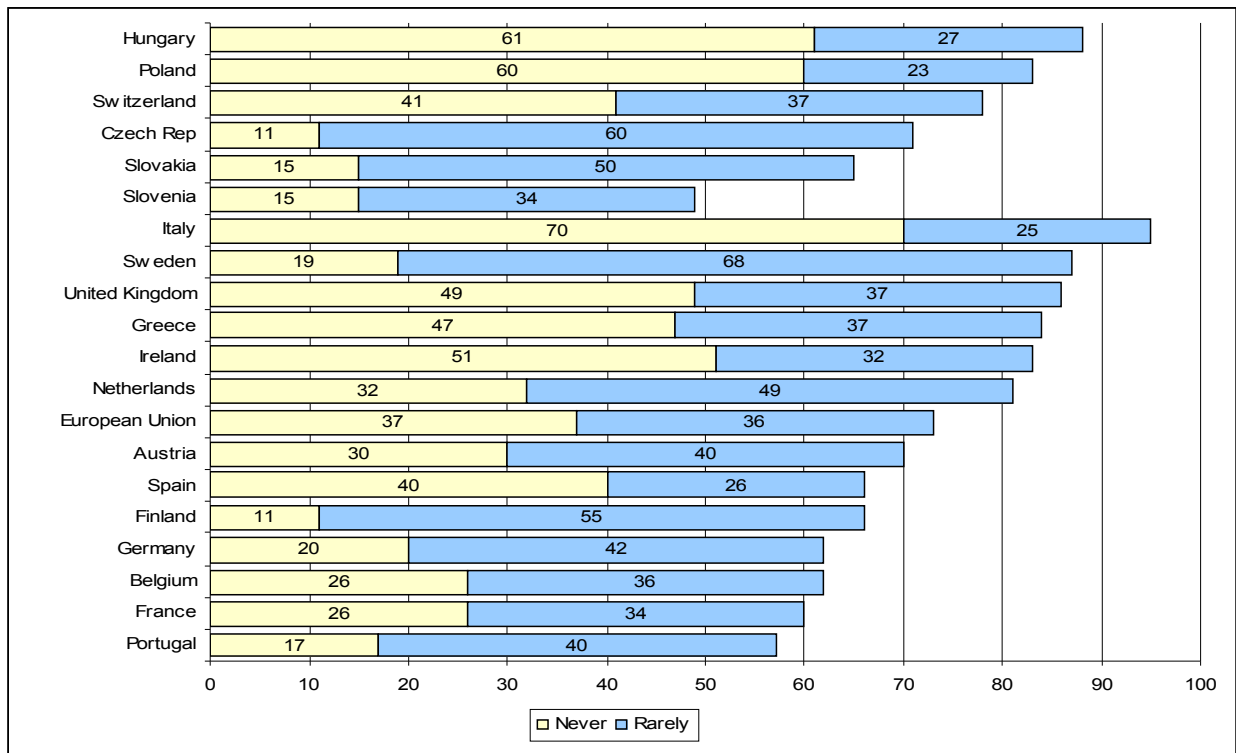


Figure 3. SARTRE 2 Results: On a typical journey, how likely is it that you will be stopped and breathalyzed?

Stimulating and sustaining media interest

A routine search for international road-safety news on the Internet consistently shows that while media across the world display a healthy interest in the topic, the volume and intensity of coverage on road-safety issues is frequently disproportionate between countries, states, and provinces. For example, while articles and broadcast segments about spectacular crashes, specific community concerns, and extraordinary traffic situations are common everywhere, news media in relatively few jurisdictions produce thoughtful and analytical coverage of broader road-safety issues and how these issues contribute to what the media sometimes refers to as the “carnage on the road.”

An examination of many of the articles from the UK, Australia, and Europe also reveals a media that appears to be much more knowledgeable, more insightful, more critical, or, at the very least, more interested in road safety than their counterparts in North America. While it appears media in most countries report (albeit briefly and usually in conjunction with a staged media event or photo opportunity) on new road-safety initiatives, programs, and legislation, it seems the media in some jurisdictions are more prepared to address provocative and politically sensitive topics. These topics include the lack of government progress on casualty-reduction targets or the lack of

traffic enforcement or general inaction by government or other third parties (including the private sector, such as insurance companies and road transportation organizations) to take steps to improve overall road safety.

Demonstrably credible public opinion surveys put forward by trusted sources with reputations for integrity and impartiality on road-safety issues generally receive good to excellent coverage by news media in any North American jurisdiction. The key, however, is to move away from “one-shot,” event-based coverage to continuing coverage of important road-safety issues. This can only be achieved through a comprehensive communications strategy that reflects a measured release of information gleaned from the survey and targets select audiences including the news media, governments, other industry stakeholders, and the general driving public.

While media coverage can draw significant attention and support to an organization’s cause, it is most effective as part of an overall communications strategy. However, this should not downplay the importance of an effective media-relations strategy. To this end, a measured, graduated approach is recommended to support the public release of these survey results. Based on the questions and anticipated results, three high-profile results should be highlighted in three separate initiatives at three separate times. (Using three "results" is thought to fall between maintaining interest and media saturation.)

The first release could be tied to a media event (along with an accompanying media package), as simple as a news conference featuring subject experts to elaborate as a demonstration of the type of driving behavior described in the results. This would serve to draw immediate broadcast and print media attention to the immediate results. The second and third releases do not necessarily have to be as elaborate, but care should be taken to ensure that the subjects are of sufficient media interest and that the subject experts are immediately available for interviews, talk show appearances, and photo opportunities. It would have to be made clear to the media over this “story arc” that the survey is a work in progress and that they can expect additional relevant data to be analyzed and subsequently released over the following weeks (or whatever time period is deemed suitable).

This approach engages the media over a longer term and encourages longer-format, perhaps more analytical coverage. For example, high-profile radio talk-show producers could be approached to arrange “day of release” appearances by the subject experts. Timing of the releases could be tied to other seasonal or societal events to maximize media and public attention.

Overall, this approach should help sustain media interest over a longer period and may encourage greater analytical and critical coverage of road safety as an issue for political administrations at all levels as well as the private sector and all citizens, not just drivers.

Challenges and considerations

There are financial, technical, logistical, as well as political and policy barriers to using surveys to measure traffic-safety programming.

Financial

The primary barrier to conducting telephone surveys is cost. As a rule, larger sample sizes provide more accurate results, more capacity to analyze the data through more precise sub-groups (e.g., demographically), and the more credibility among external audiences. Typically, the sample size selected is largely dependent on tolerance for the margin of error and budget considerations.

To obtain the basic social science sample criterion of “correct within plus or minus five percent, nineteen times out of twenty” (which is not particularly accurate when attempting to measure relatively infrequent occurrences such as violations or crashes), researchers would need approximately 500 randomly-chosen respondents matching a particular category, i.e., drivers. Obtaining this sample for even a brief survey can easily cost from \$25,000 to \$50,000, making it well beyond the entire budget of many traffic-safety programs.

As a result, online surveys are becoming a more appealing alternative as opportunity costs continue to decline with advances in technology.

Technical

Assuming evaluation funding is in place, developing an effective survey is a technical challenge. Many survey providers are willing to develop a survey based entirely upon a client’s suggested wording; consequently, surveys can be badly worded and constructed because the content experts are not survey construction experts and visa-versa. The ideal developer is a survey evaluation expert with a traffic-safety background, but there are only a few of these individuals in the field.

Logistical

Logistical issues center on sampling and sample access (mail, telephone, interview, email, driving logs, journals, etc.), survey timing, and survey frequency and continuity. In particular, program evaluation can be an afterthought, allowing for no pre/post or experimental/control structure. It can also be based upon uncertain or one-off funding, precluding measurement continuity over time. Clearly, if measuring improvement (if any) is the primary concern, then one-off measurement tools and measurement occasions are of little value.

A second logistical consideration occurs after the report is written and involves sharing the findings, assuming there is a desire to do so. Learned, peer-reviewed journals are not, for the most part, prepared to publish program evaluations unless the programs are massive and significant. Yet, for journeymen policy and program makers, the “grey literature” of surveys and local program evaluations is where important information about “what works” resides.

Political and policy

Political and policy barriers include a reluctance to evaluate at all—it’s difficult to prove an error was made if no measurement is undertaken—and a reluctance to distribute or share findings.

Additionally, if measurement is completed by the body that executed the project or supplied the funding and there is some measure of success, the result may be deemed biased and self-serving.

Sustainability is an additional quasi-political issue. Traffic-safety issues and programs go in and out of fashion, vary with supporting organizations, and can actually change and evolve (e.g., alcohol-impaired to drug-impaired driving; restraint device use to air bags). Part of the problem lies in the classification of traffic events themselves: If an impaired, speeding driver in a heavy vehicle hits a juvenile pedestrian in a snow storm at an unsigned intersection, how would the crash be classified? What issue(s) should be addressed? Clearly, to measure changes in road safety, the core issues need to be assessed and defined, both broadly and impartially, along with the identification of key driver demographic and behavioral markers.

From the above, it can be argued that survey-based measurement of road safety would best be done by entities with the following characteristics and resources:

- Well-established with a credible reputation of integrity and impartiality
- Access to substantial and secure funding
- Access to both traffic-safety program and measurement expertise
- Arms-length from specific program implementation
- Capable of dissemination and archiving data, reports, and communications
- Having a broad understanding of core traffic-safety issues and programs

Summary and recommendations

Moving forward

Surveys can offer an efficient and sound way of measuring program effects and trends in traffic safety related knowledge, attitudes and behaviors, and can be particularly useful when combined with conventional data such as crash counts, contravention counts speed-loop data, and so on. It has also been noted that surveys can be poorly executed and are especially weak as “one-offs.” Recognition and appreciation of the usefulness of survey data could be substantially improved.

In order to enhance the use of surveys and survey data, there are a number of steps that could be undertaken either independently or through a consortium of like-minded organizations with a similar commitment to improving road safety.

- Reviewing current and past surveys and survey methods to establish core traffic-safety and driver demographic issues and questions, which are then used by researchers to initiate data collection that could be compared across time and jurisdictions.
- Establishing a protocol for regular (e.g., yearly) surveys of jurisdictions through the use of “core” traffic-safety questions.

- Compiling surveys and survey data into an ongoing web-based “library” where qualified researchers could access tools and raw data. This would support powerful meta-analyses, provide researchers with the ability to apply research and theory against consistent data, and provide an interesting media resource.
- Combining observational data with survey data to address the issue of survey validity. For example, differences, if any, could be determined between observed and reported restraint device use within a population so that the validity of restraint device use survey data could be better understood. Similarly, differences between reported and observed crash rates, speeds, impaired driving, and the like could be examined.
- Supplementing jurisdictional crash reduction targets with those based on knowledge, attitude, and self-reported behavior data derived through surveys.
- Systematically monitoring media’s response to and use of survey-derived data to better understand how these data can be used most effectively.

Clearly, these steps would require commitment, leadership, and cooperation among the participating organizations, but, from the examples of the (few) large and ongoing surveys cited, this is certainly within the realm of possibility.

Conclusion

Clearly, public surveys have a multi-faceted role to play with respect to road safety. They are valuable tools with which to measure program effectiveness, deference to traffic law enforcement, knowledge, attitudes, and safety culture in general. In addition, public surveys can play an important role in improving safety culture by helping to place and sustain road safety on the public policy map. In this sense, surveys, properly communicated, can bring about Heisenberg's Principle—where the very act of observing a phenomenon can alter it.

Public surveys of this nature, while useful and effective on many fronts, can also pose a political risk to the agencies responsible for improving road safety. For example, there may be significant political fallout if thirty percent of survey respondents report “very frequently” exceeding the posted speed limit by more than 20km/h, but only one percent of those had received a traffic ticket within the past two years. However, a reduction in the number of people self-reporting that they exceed the posted speed limit by more than 20km/h and/or an increase in the number of those respondents reporting having received a ticket within the past two years would be an indication of success.

It is clear that many of the conventional practices in place to improve road safety have become institutionalized over time and, to lesser or greater degrees, do not benefit significantly from a solid base of contemporary empirical research. The challenge today is to re-establish the link between the practice and the desired outcome by using both conventional and alternative sources of data, such as public surveys, to determine the value and improve the effectiveness of conventional practices.

Public surveys are not a panacea for improving road safety but, carefully constructed and properly applied, they can provide value on many fronts. This is especially true if they are

administered by an organization with both the credibility and capacity to legitimize and properly communicate the findings. Essentially, surveys are one of the few tools available for measuring whether or not we as a society are becoming more conscious of the risks associated with road transportation and more receptive to the measures in place to help reduce them.

References

- Andreasen, A. R. 1995. *Marketing social change: Changing behavior to promote health, social development, and the environment*. San Francisco, U.S.
- Canada Safety Council (CSC). 2003. *2003 Aggressive driving study: Summary of results*. Ottawa, Canada.
- Emery, C. 1994. Library of Parliament. *Public opinion polling in Canada*. Ref: BP-371E. Ottawa, Canada.
- European Commission (EC). 2003. Directorate-General for Energy and Transport. *Saving 20,000 lives on our roads: A shared responsibility*. Luxembourg, Belgium.
- European Road Assessment Programme (EuroRAP). 2005. *From Arctic to Mediterranean, First Pan European Progress Report*. London, UK.
- Insurance Institute for Highway Safety (IIHS). 2001. *Status report: What works and doesn't work to improve highway safety*. Volume 36, No. 5. Arlington, U.S.
- Ipsos. 2004. *Canadians' national policy issues agenda*. Volume 19, Number 5. Toronto, Canada.
- International Association of Traffic and Safety Sciences (IATSC). 2005. *White paper on traffic safety in Japan 2005*. Traffic Safety Awareness Survey. Tokyo, Japan.
- Land Transport New Zealand (LTSA). 2005. *Survey of public attitudes to road safety 2004: Summary of results*. Wellington, New Zealand.
- Mäkinen, Zaidel, et al. 2003. *Traffic enforcement in Europe: Effects, measures, needs and future*. Finland.
- Miami Herald. 2005. The need for speed worries police, safety activists. Speed may kill, but it also sells cars. And that's why safety experts have a hard time curbing the horsepower race. Miami, U.S.
- Progressive. 2004. Media Release. "A lead foot can lead to a lighter wallet." Mayfield Village, Ohio.
- Social Attitudes to Road Traffic Risk in Europe (SARTRE). 1998. *The attitude and behaviour of European car drivers to road safety*. European Union.
- Traffic Injury Research Foundation (TIRF). 2001, 2002. *Road safety monitor: Drinking and driving*. Ottawa, Canada.
- Transport Canada. 1997. *Public perceptions of road Safety in Canada*. Ottawa, Canada.
- . 2004. *Road safety vision 2010–2002 annual report*. Ottawa, Canada.

———. 2006. *Survey of seatbelt use in Canada 2004–2005*. Ottawa, Canada.

Biographical statements

Paul Allen is a road safety researcher with more than ten years experience managing road safety programs for public and private sector agencies in British Columbia, Manitoba and Ontario. As a provincial road safety manager for the Insurance Corporation of British Columbia and Manager of Road Safety for Manitoba Public Insurance, he developed and implemented provincial and community-based programs and conducted in-depth research on the effectiveness of various speed and impaired driving initiatives. He has participated on numerous provincial and national safety committees and task forces including the task force that created Canada’s “Vision 2010” and has authored and presented papers on a wide variety of road safety topics. Mr. Allen is Past-President of the Canadian Association of Road Safety Professionals (www.carsp.ca).

G. William (Bill) Mercer (Ph.D. Psychology; MA Environmental Studies) is the Director of Projects at Applied Research and Evaluation Studies at the University of British Columbia (ARES—www.ares.ubc.ca). Prior roles include Issue Manager of Impaired Driving Strategies (including the province-wide CounterAttack program) and Senior Policy Analyst in the Strategic Initiatives Department, both at the Insurance Corporation of British Columbia; Senior Policy Analyst, BC Police Commission; Research Director and Senior Analyst/Manager, Police Services Branch; Director, Drinking-Driving CounterAttack Program; and Senior Research Associate, Policy Planning Branch, all at the BC Ministry of Attorney General. He has also taught psychology at a number of universities for more than a decade.