

New Ideas For Tracking Travelers

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Two new techniques have brought greater efficiency to business marketing: the analysis of consumer trends, and the computerized collection and analysis of data on individuals. These techniques may prove extremely useful to transportation planners. For example, fewer than half of the adults in the United States are heavy drivers, and surveys reveal the demographics, attitudes, and habits of this crucial segment. Other surveys reveal the ways drivers are changing their behavior by using cellular telephones and other new technology in the automobile. Survey research and database marketing can help planners design attractive options to single-passenger automobile use. These techniques are already at work in Adelaide, Australia, and other cities.

Basic demographic data can reveal hidden truths about complex social questions. The data have this power because demographic trends explain how society changes on the deepest level. When income distributions or migration patterns change, for example, the behavior of individuals often changes in response, and on a mass scale. If you don't know the trends, the shifting responses of voters and consumers might seem impossible to explain. If you do know the trends, short-term changes in behavior make a lot more sense and your organization can anticipate them.

In the United States, several long-term demographic and attitudinal trends are behind recent changes in transportation use. This paper summarizes those trends. It reports on research on the attitudes American drivers have about the time they spend in their vehicles, because knowing those attitudes can help planners design attractive transportation alternatives. The article also describes changes in the ways businesses collect data on their markets, and it suggests ways these new tools might be used to improve the efficiency of metropolitan transportation systems. The article cites two examples of innovative marketing communications in transportation: the marketing campaign behind the Honda Hybrid automobile, and a pilot project encouraging "travel blending" in Adelaide, Australia.

THE DRIVING BOOM

The numbers show that America is entering its fourth decade of steady increases in vehicle miles driven. Between 1969 and 1995, the number of drivers in the United States increased more than three times as fast as the population, and the number of household vehicles increased six times as fast. In 1990, Americans drove about 1.25 trillion mi. In 1997, they drove about 1.5 trillion mi (1). The United States now has more than one car for each licensed driver. People used to say that a man's home is his castle, but this is no longer the case. Most Americans now see their automobiles as their most important personal space. The car has become the castle.

The three-decade surge in driving has slowed slightly in recent years, although forecasts call for continued growth. The total number of miles driven on American

highways increased 10 percent between July 1992 and July 1997. That is faster than population growth, but slower than the 16 percent increase between 1982 and 1987. Still, gasoline consumption is projected to increase faster than the population over the next two decades, according to the Department of Energy (2).

Among Americans who drive—and 9 out of 10 adults do—men spend an average of 81 minutes a day behind the wheel, and women spend 64 minutes a day, according to the 1995 NPTS (3). This is more time than the average American spends cooking or eating, according to the Americans' Use of Time Survey (4). It is more than twice as much time as the average parent spends with his or her children. And two-thirds of all car trips are made alone, with only the radio and billboards for company, according to the NPTS.

These facts hint at a major unexplored area in survey research. What is going on in the minds of drivers? Previous research has focused on automobiles—where they go, when they go, and how long it takes. We also know a few of the basic facts about the demographics of drivers. But efforts to change drivers' behavior would be assisted by a more detailed understanding of the habits of the person behind the wheel. Researchers who want to reach drivers with advertising should know what drivers read, and what they watch on TV. They should also know what drivers like about driving, what offends them, what they're afraid of, and what attracts them. In fact, technology now allows researchers to build detailed dossiers on the habits of individual drivers. By aggregating these files, researchers could build accurate predictive models of travel behavior, just as marketers analyze customer databases to predict sales.

Businesses know that this kind of research helps design effective advertising and marketing. This paper suggests ways that market research techniques might also assist those who seek to build better transportation alternatives.

THE WORKER BOOM

The main reason for the driving boom has been rapid growth in the labor force. The number of civilian workers grew from 107 million in 1980 to 132 million in 1995, and it is projected to reach 147 million in 2005, according to the BLS (5). While the overall population is growing at about 0.9 percent a year, the number of people holding jobs has grown at about 1.5 percent a year.

One reason for rapid labor-force growth is rapid growth in the number of working women. The proportion of women 16 and older in the labor force increased from 37 percent in 1969 to 59 percent in 1995. In that period, the proportion of women who were drivers increased from 61 percent to 86 percent, according to the NPTS.

Another, bigger reason for the driver boom is the baby-boom generation, or the 77 million Americans born between 1946 and 1964. The baby-boom generation's huge size, relative to other generations, means that boomers create social revolutions as they pass through each stage of life. In 1969, the oldest boomers were 23. Over the next 2 decades, they flooded the labor force. In 1990, when the youngest boomers had their first jobs and a smaller generation began entering the labor force, the driving boom began to slow down.

In 2000, baby boomers are age 36 to 54. They are at the peak of the life-stage that involves raising children and conducting careers. They control the majority of spending in most consumer markets. They are also at the peak of their driving careers. Men age 35

to 54 drive an average of 18,000 mi a year, compared with 15,000 for those age 55 to 64; for women, the comparable averages are 10,200 mi and 7,000 mi, according to the NPTS. The boomers' driving days may start fading out in about 10 years, when the oldest ones enter their mid-60s. But until then, the forecast is for continued heavy driving, with occasional outbreaks of congestion.

Baby boomers are about 4 out of 10 U.S. adults. Only 48 percent of adults are "heavy drivers," meaning that they drive 100 mi or more in an average week, according to a 1998 survey conducted for American Demographics magazine by Maritz Marketing Research (6). Adults 18 to 34 and those 35 to 54 are both more likely than average to be heavy drivers, while adults age 55 and older are significantly less likely than the average Americans to drive heavily. But the biggest predictor of heavy driving is a healthy income. The proportion of heavy drivers is 33 percent among those with a household income under \$25,000; 54 percent for those with incomes of \$25,000 to \$49,999; 65 percent for those with incomes of \$50,000 to \$74,999; and 70 percent for those with incomes of \$75,000 or more. In other words, people with the nicest homes actually live in their cars.

DUAL-EARNER DYNASTY

The new face of affluence, and heavy driving, is the dual-earner household. Between 1950 and 1996, the proportion of married couples with just one earner shrank from 62 percent to 17 percent, while the proportion of couples with two earners rose from 20 percent to 43 percent, according to the Bureau of the Census (7). Working women, and especially working mothers, are causing the biggest changes in how our transportation system is used.

Men are much more likely to be heavy drivers than women, because men are still more likely than women to hold full-time jobs. But if you separate the workers from the non-workers, a different story emerges. Employed women may drive just as much or even more than employed men do. Also, working women are much more likely than men to stop and do household errands on their way to and from work.

For the average working woman, the daily morning ride is based around the work trip. But it might also include a school trip, because the majority of children age 5 to 15 now arrive at school as passengers in private vehicles, according to the NPTS. The average woman's afternoon ride might count as a work commute, a school trip, and one or more shopping trips if she stops to get the kids, the dry cleaning, and groceries. So even though men drive more, working women are a more important target for outdoor advertising that promotes grocery stores, dry cleaners, drive-through banks, or take-out food. And as the household member most likely to plan multi-purpose trips, working women are also much more dependent than men are on personal vehicles.

Working women and multi-purpose trips are the main reason why carpooling fell so far out of fashion in the 1980s. They are also the major reason for one of the hottest consumer products of the 1990s—the cellular phone.

THE CELL PHONE BOOM

In 1988, about 2 million cellular phones were in use in the United States. That number has risen rapidly every year since, and it shows no sign of slowing down. At the end of 1999, there were more than 82 million cellular phone subscribers in the United States, according to the Cellular Telecommunications Industry Association (8). As their numbers continue to grow, cellular-phone users are transforming transportation and communications in unexpected ways. For example, cellular phones are allowing billboards to become direct-response advertising. Instead of relying on an estimated number of “impressions” based on traffic counts, someone who advertises on a billboard will know exactly how many calls, and how much revenue, each billboard produces.

Cellular phones are also changing our behavior in the home. It usually doesn’t take long to discover that a cell phone is a handy tool for communicating with the cook at home to fine-tune a shopping list. It’s an even more handy tool if you want to talk to the cook at a take-out food shop so dinner is ready when you stop to pick it up. But the biggest changes fueled by the cell phone are happening out on the frontier, in big new homes located at the outer fringes of big-city suburbs.

The people who live in big new suburban homes are the ones who live in their cars. Now they are finding ways to control their homes from their cars, with a system called “smart-house technology.” With a phone keypad or their voice, they can ask their appliances to reset the thermostat, start the oven, run the bath, or record their favorite television program. With this technology, dinner will be cooking, the bath will be drawn, and the house will be nice and warm when the owner arrives, even though no one will be home. These are some of the ways people are adjusting to the reality of long commutes.

Cellular Drivers

Nationally, about 3 out of 10 U.S. drivers usually had a working telephone with them in their car in mid-1998, according to Maritz Marketing Research. The survey showed that men are only slightly more likely than women to have a phone. Drivers 25 to 44 are more likely than average to carry phones. Those age 45 to 54 have an average likelihood of being wired, and drivers 55 to 64 are below average. And the youngest drivers (age 18 to 24) are far more likely than the oldest (age 65 and older) to drive with a phone.

Cellular phones are expensive, so it is not surprising that their use is heavily concentrated among the most affluent. Only 12 percent of drivers with incomes below \$10,000 usually carry phones in their car, compared with 26 percent of those earning \$25,000 to \$34,999 and 34 percent of those earning \$35,000 to \$74,999, according to the Maritz survey. Among the most affluent drivers (those earning more than \$75,000 a year), a majority (54 percent) had cellular phones in mid-1998.

As the number of cellular phones increases and the cost declines, their use will trickle down from more affluent to less affluent drivers. But it will also trickle up the age ladder, as young adults get hooked on cellular phones and grow older. This means that marketing messages encouraging the use of cellular phones will appeal strongly to two important groups—the affluent, who are the heaviest drivers, and the young, who are the heaviest drivers of tomorrow.

Cell phones are already important to traffic safety. In coming years, their usefulness will spread further. For example, dashboard navigation systems will have a phone module so they can get information about traffic jams to drivers in time to take evasive action.

It's important to transportation researchers to track cell phone use and other advances in driving technology. It is also important for transportation planners to stay abreast of this industry. This means "scanning the horizon" of trade magazines, reports, and conferences for information about the key tools drivers use, and how they are changing.

ATTITUDES OF DRIVERS

One of the most fruitful unexplored areas in transportation research is finding out what is on people's minds as they drive. We already know a little bit, and what we do know suggests that much of the conventional wisdom about driving is wrong.

Driving is often portrayed in the media as a chaotic, dangerous, and frustrating activity. But Americans get a lot of pleasure out of driving, and they are not overly concerned about congestion or crime, according to two surveys. The first is the attitudinal component of the NPTS, summarized in the report "Transportation Users Views of Quality." (9) The second is the Maritz Marketing Research survey conducted for American Demographics.

Who Finds Traffic Stressful?

The biggest surprise in these surveys is that congestion isn't seen as a problem by most drivers. In the Maritz survey, only 35 percent of adults agree with the statement "traffic congestion is a source of stress in my life." Another 34 percent disagree, and 31 percent have no opinion. In other words, almost two-thirds of drivers either aren't bothered by traffic, or don't care. It was even less of a problem in the NPTS, where only 27 percent agreed that congestion is a major problem. It may not be a coincidence that the share of the U.S. population living in metropolitan areas of 2.5 million or more (36 percent) is the same as those who are stressed out by traffic. After all, the biggest metros are where monster traffic jams occur daily.

Men and women are equally likely to say they are stressed by traffic. Impatient young drivers (age 18 to 24) are more likely than average to be annoyed by congestion, but other age groups are about average. Once again, affluence is the key variable. Traffic stress is average for all but the highest income group, but 46 percent of drivers earning \$75,000 or more say they get stressed by traffic. In the NPTS, it's people who drive more than 14,000 mi a year who are most likely to be upset about congestion.

This means that linking a billboard to a traffic information service might be a good idea along the suburban freeways of Los Angeles, Dallas, and other haunts of affluent commuters. But even if drivers are stuck in traffic jams when they see a traffic-themed message, most of them won't pay attention to it.

Who Feels Unsafe in Their Car?

What about the fear of carjacking, car crashes, and other mayhem in the streets? A lot of marketers who sell cell phones and automotive services play on fear and the desire for

security. But again, most drivers will not respond to this pitch. Only 23 percent of drivers agree with the statement: “There are times when I feel unsafe in my car.” Nearly half of drivers (49 percent) actively disagree with this statement, and 28 percent express no opinion, according to the Maritz survey. It’s the same in the 1995 NPTS, where only 22 percent of drivers said that crime against motorists was a large problem.

Well-to-do working women are perhaps the key group for transportation planners, and they also might seem to be the group most concerned about violent crime. But only 27 percent of women admit to ever feeling unsafe in their car, compared with 19 percent of men in the Maritz survey. Only 25 percent of those earning \$50,000 or more ever feel unsafe. The most likely to feel unsafe are the elderly and the poor. Twenty-eight percent of drivers age 65 and older ever feel unsafe, as do 39 percent earning less than \$10,000 a year.

Who Enjoys Driving Alone?

The surprising truth is that average Americans look forward to driving with pleasure, because they see it as a time for quiet relaxation. Forty-five percent of drivers in the Maritz survey agree with the statement, “driving is my time to think and enjoy being alone.” Young drivers enjoy the solitude of driving most: 61 percent of those 18 to 24 agree with the statement, compared with 48 percent of those 25 to 34, 46 percent of drivers 35 to 54, and 36 percent of those 55 and older. After all, the car has been a powerful symbol of freedom for young adults since the invention of the secluded parking spot.

Men and women are equally likely to see driving as a chance to think and enjoy being alone. Although women are more likely than men to “strongly” agree with the statement (by giving it a rating of five on a five-point scale) and men are more likely to “somewhat” agree (a rating of four). The surprise is that affluent drivers are most likely to see driving as a haven from their stressed-out lives, not a source of aggravation. Agreement with the “being alone” statement rises with income, from 46 percent of those earning less than \$10,000 a year to 53 percent of those earning more than \$75,000. In the NPTS, a stunning 85 percent of respondents agreed with the statement, “I like traveling by private vehicle.”

Two major lessons are suggested by these surveys. One is that planners who dream of a future where average Americans abandon their cars at home and switch to public transportation or carpooling are being unrealistic. This will not happen in our lifetime. People love the freedom, solitude, and choice they get from their personal cars, and they are not about to give them up. This indicates that the proper course of action is to improve the personal vehicle so that it pollutes less, and to encourage people to use the full spectrum of personal transportation choices. There are times when bicycling, walking, carpooling, and taking public transportation are the most efficient and most pleasant ways to get around. Personal-automobile users might make those choices at the appropriate times if they are encouraged to do so, and this could have a big impact on traffic.

The second lesson is that there is no average driver. The elderly are most afraid of crime in their cars, while the young are most fond of being alone in their cars. Women are the leaders when it comes to doing many different things in one driving trip, while men drive more. The key to changing behavior and improving our understanding of

transportation use, therefore, is to construct the most complete profile possible of each travel segment, because every traveler is different.

THE SHADOW PERSON

In post-industrial countries like the United States, businesses compile data from lots of different sources to get a detailed portrait of the demographics, habits, and attitudes of individual customers. Behind every customer in these countries is a “shadow person” comprised of all of the statistics about them that have been compiled and stored. The information might include a person’s demographics, their favorite TV shows, their past orders from a company, their preferences in a hotel room, their clothing sizes, their family’s names and ages, and above all, their address. These statistics, when all grouped together, create a statistical portrait of behavior that is likely to reveal a person’s future choices.

American businesses woke up to the possibilities of these techniques several years ago. They were faced with the convergence of several big trends in society, and they took advantage of them by building statistical portraits and using them to sell products and services more efficiently. The first trend is increasing computer power. About a decade ago, it became relatively easy for affordable personal computers to manipulate huge data sets.

The second trend is a change in each business’ customer base. Because baby boomers are much more highly educated than previous generations were, they are a different breed of customer. As baby boomers gathered economic power and entered the peak of their working lives, businesses found their customers demanding better service. Customers also became more comfortable taking advantage of new technologies that offered them better service, such as toll-free telephone numbers and the Internet.

The third trend that has transformed business, customer service, and market research is the Internet itself. Online communication is a regular part of life now for 68 million adults in the United States, according to Nielsen Netratings (10). This means that close to half of all adults use the Internet regularly, and Internet use is still growing rapidly.

In the mid-1990s, a popular business book called *The One To One Future: Building Relationships One Customer at a Time* argued that the deft use of computer technology, especially database technology, would allow businesses to have personal relationships with millions of customers (11). The idea was called mass customization. There are two benefits to businesses that go down this path, according to the argument. First, mass customization might make customers more loyal. If customers get the feeling that a business knows them and remembers their likes and dislikes, maybe they will keep coming back.

The second benefit is much more important, and much less recognized. It is the growth of the shadow person. These rich portraits of how people live and the choices they make give businesses a much better sense of what might make people buy.

Shadow Drivers: The Honda Hybrid

In traditional survey research, it is forbidden to attempt to change a person's behavior through a research instrument. It violates a basic tenet of research, which is that researchers observe but do not intrude on research subjects. If research subjects believe

that researchers are actually trying to change their behavior—in other words, to sell them something—they will be less likely to participate in surveys in general.

Another sacred cow of survey research is the representative sample. For a survey to describe reality, it must be administered to a subset of the population that is carefully chosen to represent the characteristics of the entire population. Ignoring this rule invites “sample bias,” which damages the credibility of survey results.

Today, in the business world, computer technologies are challenging these rules. The low cost of collecting information through the Internet makes it easy and cheap to take a survey, even if the people who respond are not a representative sample. Also, the benefits of collecting information in conjunction with a commercial offer are irresistible to a for-profit business, even if they might erode people’s faith in questionnaires and increase the proportion of people who refuse to answer any surveys.

These trends cause great concern among professionals in social research, as they should. But instead of merely issuing a blanket condemnation of these research practices, responsible researchers should investigate them. There are cases in which unrepresentative samples may yield the best research results. There are also cases in which it is perfectly acceptable to sell a product or promote a behavior change while collecting consumer information. When a business researcher wants to compile a profile of customers, for example, sample bias is not a problem—it is the goal. Customer profiles and lists of prospective customers are concentrated pictures of people who have or are ready to adopt a particular kind of behavior.

The Honda VV hybrid automobile goes on sale in the United States in 2000. It is a 2-seater that gets 70 mi per gallon. It goes 700 mi on a tank of gas. It weighs about 2,000 pounds, but it gets good ratings in crash tests. It is powered by a three-cylinder gas engine linked to an electric engine. It switches from one engine to the other, depending on what is most efficient for the car to do at the time. And when the gas engine is running or when you hit the brakes, the extra power recharges the electric engine. Ford, Toyota, Chrysler, and other automakers are also developing hybrids in the United States, but Honda got to the market first.

This revolutionary car is being sold in a revolutionary way. In June 1999, Honda opened a site on the World Wide Web to promote this car (12). The Honda Hybrid site contains pictures and press information and all the other things one generally sees on a website devoted to a car. But it also has a difference, which is an online survey. “Thanks for your interest in the new Honda Hybrid,” says the survey. “We are as interested as you are in our new vehicle. So please take a moment to complete the questionnaire below. We will be sure to notify you as soon as more information becomes available.”

The survey’s introduction has an informal, friendly tone. Honda is saying, “we are in the same group as you. We are both really interested in this car. Give us a little bit of information about yourself, so we can keep in touch and give you more information about the car.”

The first thing Honda asks for in this survey is the person’s zip code. This number may be more important than anything else in market research, because it allows the company to link a person with a geodemographic clustering system. These systems, which are sold by private data companies such as Claritas and CACI, use census demographics and marketing surveys to predict the demographics and behavior of residents on a neighborhood-by-neighborhood basis.

The second item in the survey asks how many vehicles are in the household. This number is important because other research has shown that hybrid cars are most attractive to consumers as runabouts, or second cars.

The survey goes on to ask about the person's commuting habits, what they now drive, and what their past experience has been with Hondas. Then the survey asks, "Why are you interested in the hybrid car?" This is another way of asking, "What marketing messages would work best on you and your friends?"

The survey asks the respondent for their demographics, but it also asks them to give their favorite magazine, favorite TV show, favorite website, and the clubs they belong to. Finally it asks for the respondent's name and address, so Honda can contact the person as hybrid cars become available in their area.

Surveys like these are proving to be an effective way to sell cars. A previous gas-only car, the Honda CRV, also had a website with a survey. The car got about 100,000 surveys in its first year, according to Honda, and about 20,000 of those surveyed ended up buying the car. That is \$40 million in incremental business from a web page that probably cost a couple of thousand dollars. This kind of research is based on building a relationship with an individual, entering into a conversation with an individual, and building brand loyalty.

PRIVACY CONCERNS

The Internet makes it possible to collect huge volumes of information from a large number of people for a relatively small price. A concern that often arises from this development has to do with privacy. In the United States, there are few regulations controlling the ways in which businesses can collect information. But surveys show that a high proportion of Americans are concerned about their consumer dossiers. The idea of a "shadow person" is troubling to those who remember how information has been used to squelch civil liberties.

Two general rules are useful when dealing with consumer attitudes toward privacy. First, a person's concern over their privacy varies tremendously according to what kind of data is being collected. People are extremely sensitive about sharing their medical records or their credit reports, but many do not care if a business knows their consumer preferences. In the United States, people are more likely to cooperate with a survey effort if they are given some incentive to respond. If they see a personal benefit, they will give information in exchange.

Second, businesses that collect information have learned to deal with customer complaints by following three principles which have been called "knowledge, notice, and no." Knowledge is when a responsible researcher tells the subject that he or she is collecting data for a profile. Every time data is being collected for a dossier, the researcher should tell the subject that it is being done. Researchers should also agree to give their subjects notice whenever they intend to share these data with another party. Most importantly, researchers must give their subjects the option of having data held out from the file so that it is not shared with any other party, or not used at all, depending on the subject's wishes.

TRAVEL BLENDING IN ADELAIDE

The general idea in data-driven marketing is to combine two kinds of information. The first kind is demographic information and other information on values and attitudes; when combined, these create a picture of a consumer's attributes. Demographics describe a person's outer life, and values and attitudes describe their inner life. The other half of the consumer's statistical portrait is information about their habits, such as what they watch and read, what they do on the Internet, what they buy, and how they spend their time. This profile of attributes and behavior is likely to predict an individual's behavior with a high degree of accuracy, once it becomes detailed enough. And when many detailed portraits are combined and analyzed, an aggregate portrait of an entire market can emerge.

How might a transportation agency use this technique to encourage the use of buses, bikes, carpools, and other transportation alternatives? First, the agency might encourage local people to fill out surveys that describe their transportation habits in detail. It could analyze the responses to these surveys and tell respondents how they might blend different transportation options together or combine trips. At the same time, the agency could gather an ever-expanding base of data on its market from outside sources such as the Bureau of the Census or the BTS. By combining local surveys with national information, the agency could see how transportation use in its market is different from national averages, and what might be fruitful areas for further research.

In fact, the brightest transportation planners are now starting down this path. Adelaide is a city of 1.2 million people in South Australia. It is similar to San Diego in many ways, with an arid climate, great beaches, and very low population density. About 3 to 10 percent of trips in Australia are by public transportation, a similar share to that found in the United States. The rest of trips in Australia are by private vehicle. The average length of a trip in Adelaide is very short, similar to U.S. metropolitan areas, about 12 minutes. In Australia, air pollution and traffic congestion are increasingly being viewed as problems.

The state transportation agency in South Australia has a large and very well funded system of buses, light rail, bike paths, pedestrian areas. All of them are under-utilized (13). So the goal of this transportation agency is not necessarily to get people out of their cars, but to get people to use the right choice for each trip. The agency calls this goal "travel blending." It means encouraging people to take a car to a train, to take a bike to the bus stop, or maybe to walk to a shopping area instead of driving a car less than a mile. This goal also includes what Americans call "trip chaining," which means combining four purposes in one automobile trip instead of taking four separate trips.

Transport South Australia sells travel blending to people as a win-win situation. It argues that more efficient use of transport options gives people more time for their family and their home, even as it relieves the city of pollution and congestion.

The agency's program is called Travel Smart. It works one person at a time. The agency places advertising that encourages people to call for tips on how they might save time and money by traveling smarter. When someone calls, they get a brochure and a questionnaire in diary form. They fill out the diary for a week to measure how they travel, and return the completed survey to the agency. Someone in the agency analyzes the respondent's habits and compares them to travel options in the area, then sends back results and ideas for small changes in behavior. The respondent receives another brochure

encouraging them to make these changes and explaining how to do it—with such information as when and where to catch the bus, how to buy discounted tickets in advance, or where the bike paths are. About 4 weeks later, he or she fills in another diary to see if the changes have benefited them.

Travel Smart is not an especially large or complex program, and it is also a new program. Yet its early results have been dramatic. People who participated in Travel Smart decreased their car travel an average of 22 percent in the first month after receiving the suggestions, according to Travel Smart research. More important, however, is the message that emerged when the earliest users were contacted six months later. The general pattern in programs of this type is not encouraging: people who start using the bus or another alternative to personal vehicles usually slip back into their old habits when the newness of the alternative wears off. But with Travel Smart, the first clients actually decreased their use of personal vehicles even further 6 months later. These early findings show that small changes in behavior and education at the individual level can make a big difference. The lasting effect may be due to the personalized service provided at the beginning of each customer's experience.

The Adelaide program shows a transportation agency how its “customers”—people who use the transportation system—actually behave in a one-to-one, ongoing way. As the agency accumulates more and more individual records on travelers, it has the opportunity to build a predictive model of transportation behavior from these data. A good predictive model of travel behavior could reduce the need for new roads and increase the use of existing alternatives.

Several years ago, the state of New Jersey made an important advance in its emergency management system. Using a Geographic Information System (GIS), researchers put every address in the state into a computer database. Their goal was to do a better job of routing emergency response. But the same thing could be done to improve any kind of transportation route. If address files are linked to databases on transportation alternatives and current road projects, anyone could go onto the Internet and analyze their own behavior in the style of Travel Smart. And every time someone made such an investigation, a state transportation bureau would get another record for its files (14).

In a few years, models now being built by such programs as Travel Smart could be robust enough to give transportation planners a “shadow person” for each traveler in their markets. Thanks to technological and social trends, transportation researchers now have the opportunity to collect many individual records and use them to build a predictive model of travel behavior. This technique may bring many important new advances in transportation research in the next decade.

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