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How do you count something that does not happen? When you success is based on making something disappear, how do you measure that? These are challenges faced by those of us in the TDM world. We are tasked with making the use of single occupancy vehicle transportation seemingly disappear at our work sites, for our clients, and in our regions.

Since TDM began to be funded by public resources in the 1970s and 80s, the industry has continued to develop various ways of measuring its impacts. Arguably the public has a right to know if they are being well served by spending ever more limited resources on TDM related activities. As technology has improved and survey collection techniques have become web-based and cheaper, the ability to collect data about TDM activities is easier than ever before.

This edition of TDM review will present some innovative and cutting edge reports of how fellow ACT members have been trying to account for their work. We hope that by presenting this information to you, that you will be able to apply these techniques in your context. TDM is not an exact science as we deal with human behavior, economics, personal preferences, and interpersonal dynamics, but with efforts made like the ones you’ll read about in this edition of TDM Review, the industry gets closer to standardizing performance measures and methods of analysis.

I will conclude with an open invitation to our members to reach out to me or any of the ACT leadership team. We are here to help you grow and prosper as TDM professionals. You can reach me at shawb@upenn.edu.
Editor’s Message

Kay Carson

In our world of Travel Demand Management, we can point to many “successful” programs. But, what is success? Perhaps a better question is, “What is success for your program, given your location, situation, and resources?” Even more to the point, did you get where you wanted to go; did you even stay on the path?

In this edition of TDM Review, we are presenting a variety of success perspectives – what is it; how to head towards it; and, how to measure it. We can tally up plenty of activity measures – employees at transportation awareness events, sign-ups for ride-matching, participation in incentive programs, visits to websites. We can also report what our funding agents, board members, and stakeholders favor. But, does any of this lead to filling more seats on buses, trains, vanpools, cars, or bicycles?

Now, let’s add the external factors over which we have no control – gas prices go up, then down; companies are hiring, then laying off; ozone alerts increase, then they drop. Are we having fun yet?

We are lucky to work in a dynamic field, and we can take advantage of innovation and technology to try a new approach, based on facts and factors that shape our programs. The experiences and lessons learned that are presented in these articles on “Metrics and Measures” are informative, creative, and inspiring.

Kay Carson

Reach scores of dedicated sustainable mobility professionals through TDM Review, the leading publication of the transportation demand management industry. With its entirely electronic format, TDM Review offers our readers access to your firm or organization with a direct, one-click link through your ad. For more information on advertising opportunities in TDM Review, contact Kevin Oliff at 888-719-5772 Ext. 3 or oliff@actweb.org.
Guest Editor’s Message

Philip L. Winters

A former CEO of International Telephone and Telegraph once said, “It is an immutable law in business that words are words, explanations are explanations, promises are promises but only performance is reality.”

The same law holds true for those in the transportation demand management business. When push comes to shove (see Congress) on a new federal transportation authorization bill, we are likely to see the next authorization bill place more emphasis on performance and accountability. For example, Rep. John Mica (R-FL), chairman of the Transportation and Infrastructure Committee of the House of Representatives recently stated that in a Roll Call op-ed piece, “the new fiscally responsible initiative streamlines the federal bureaucracy in other ways as well. There are more than 100 federal surface transportation programs, many of which are duplicative or do not serve a national interest. An unprecedented consolidation and elimination of about 70 of these programs under this proposal will decrease the size of the federal bureaucracy, freeing up funds that can be invested in infrastructure instead of siphoned off to maintain unnecessary programs. States are provided more authority and flexibility to address their most critical infrastructure needs. However, new performance measures and transparency requirements will hold states accountable for their spending decisions.”

This TDM Review issue contains a variety of articles on the importance of performance measurement and evaluation.

Howard Jennings, Director of Arlington County (Virginia) Commuter Services, discusses the importance of securing buy-in from all stakeholders as well as producing quantifiable results in Research Elevates TDM to the Strategic Level in Arlington County, Virginia. He notes that the process begins with identifying the right things to measure. What are the right measures may depend on who are your stakeholders and what is important to them. For example, their NetPromoter score expresses customer satisfaction with their services.

Emily Gray, Center for Transportation and the Environment, provides a summary of an evaluation that looks beyond a simple before/after evaluation. Their longitudinal evaluation of Clean Air Campaign’s Cash for Commuters (CfC) program goes beyond the immediate impacts of CfC. Their evaluation demonstrates the value of follow-up surveys to provide proof that the “lifecycle” of non-drive alone incentives can extend well beyond the period when the incentives were offered. Such an approach has a significant impact on the return on investment.

Using Performance Measurement as a Tool to Demonstrate TDM Success by Frank Mongioi, Ryan Thompson and Sonya Suter (ICF) provides a primer on the importance of selecting appropriate performance measurements and focusing on return on investment. They note that measuring the level of effort used in internal and external activities can...
reveal a lot about a TDM program’s level of efficiency and how decisions about outreach efforts will impact the bottom line.

The article from Todd Litman, VTPI, Sustainable Transportation Indicators for TDM Planning Sustainability, discusses the need for balancing economic, social and environmental goals and objectives. With a growing interest in the concepts of sustainability, livability, and sustainable transport, communities will be looking at a broader mix of performance measures. He summarizes a practical set of sustainable transport goals, objectives and performance indicators developed with the support of the Transportation Research Board Sustainable Transportation Indicators Subcommittee that should be of interest to all TDM professionals.

Finally, Michael Wright, Florida Department of Transportation, and I prepared a summary of the process used to evaluate commuter assistance programs (CAP) in Florida. The Florida CAP performance measures were developed based on the input from FDOT and CAPs, lessons learned from other TDM evaluations, and currently available tools.

As noted leadership trainer John E. Jones says, “What gets measured gets done, what gets measured and fed back gets done well, what gets rewarded gets repeated.” Let’s continue to measure up!

On the issue of knowing where you are before moving forward, former baseball great Yogi Berra may have said it best, “You’ve got to be very careful if you don’t know where you’re going, because you might not get there.”

Phil Winters is Director, TDM Program, at the Center for Urban Transportation Research at the University of South Florida. Phil manages the National TDM and Telework Clearinghouse, Best Workplaces for Commuters, and the Florida Commuter Choice Certificate Program. He created the popular TRANSP-TDM listserv in 1998 that now has 1,950+ active subscribers. He is an emeritus member of the Committee on TDM of the Transportation Research Board and received the prestigious Association for Commuter Transportation’s Bob Owens TDM Champion Award in 2007.
Research Elevates TDM to the Strategic Level in Arlington County, Va.

Howard Jennings
Director of Arlington County Commuter Services

Research: An on-going, integral part of the commuter services program

“The research is the lifeblood of our program”, remarked Arlington County Commuter Services Bureau Chief Chris Hamilton in a recent strategy session. In many ways, this is true, as our on-going research program, now in its sixth year, serves many vital purposes. We use our research findings for such things as demonstrating the benefits of our services to employers and funders. Our Transportation Division director uses it regularly to document the success of the County’s transit-oriented development policies. County Board members cite it in justifying funding for Commuter Services. Far from sitting on the shelf, our research program is a living part of our whole TDM program which we use to evaluate our customer service, to inform our annual strategic plan and monthly work plans, and to craft our marketing messages.

In 2006 we realized we had plenty of data on what we were doing: number of sales visits to employers, number of customers served in our Commuter Stores, hits to our websites, etc. But we didn’t really know what impact we were having: how many commuters did we shift from SOV to other modes, how many miles of travel did we reduce, or what did our customers think of our services? Nestled in the core of the Washington, DC metropolitan area, Arlington is small in population, but a major employment center of 212,000 jobs, attracting commuters from the entire region; so we wanted information on our regional customers as well.

We wanted research that could answer these questions with credibility and which could also help us in refining our current programs and identifying the need for new or different services. We wanted a consultant who really understood market-based product development, customer service, and the TDM industry. In the end we hired two: Southeastern Institute of Research in Richmond, Virginia, and LDA Consulting of Washington, D.C., who first helped us develop a strategic plan for our research. The planning process became a very hands-on, intensive evaluation of our program with active involvement of all our management team. Together we laid out our many target audiences, the survey methodologies to reach them, analysis techniques to document the benefits, and a multi-year schedule to phase the work to cover our comprehensive array of services within budgets we could afford.

This process and the results have been of huge value to us from the very onset, so much so that the research process has been institutionalized as an integral, on-going program within our Commuter Services Bureau. It has also come to be recognized by the rest of the larger Transportation Division as an important source of strategic level information benefiting all of Arlington County’s mode services. An important by-product of the research program thus has been to substantially raise the credibility and role of TDM as a major player in the County’s transportation program.

Monthly research team meetings have become a staple of the bureau’s operations. Most of our senior management is at the table as we review new survey results, evaluate what the data means for our program operations, and plot new strategies for research and services. Our TDM research spending each year is approximately 5% of our total budget – a rule of thumb in line with private industry practices.
Methodology

Given that the goal of our research is to evaluate the response of our customers to our services and to quantify benefits to the community, we are engaged for the most part in primary research surveys to learn and evaluate what our constituents have to say. We also supplement our own surveys with those of other entities, such as the Metropolitan Washington Council of Governments and the Commonwealth of Virginia. Following is information on the key studies and the order in which they were done. We started with those that would tell us about our most essential audiences, the citizens of Arlington County and the business community. Summaries and details of all studies can be found at our online TDM Research Center which is intended to be a resource available to everyone, www.commuterpage.com/research.

Each study gives us important information. Collectively they tell even more as they provide corroborating data, trends, and a multi-faceted look at our total TDM program. Core data collected for each audience includes commute mode choice, awareness and use of our programs, mode changes due to our services, satisfaction, as well as more detailed information unique to each service. Most surveys required 15 – 20 minutes to complete. This is longer than recommended for most survey topics; but interest in transportation is high; and people generally are willing to complete the surveys. A wide variety of survey techniques was used depending upon each program and scientifically valid ways available to reach its users.

Customer Touch-Points Analysis – How to be more Customer-Centric

As an early step in developing the Research Plan, we analyzed customers for each of our services: how they hear about us, examining each point of contact with our communications materials or staff, evaluating their “flow” through our services, service outcomes, better ways to retain them as customers, and how to measure the results at each important touch-point. This was a very valuable exercise for service improvement and for design of the surveys.

Arlington Residents Studies 2006 and 2009 and Residents Green Study 2009
Random digit dialing telephone survey for greatest statistical accuracy, supplemented in 2009 with short form to expand sample at lower cost.

Arlington Transportation Partners Employer Client Study 2007
Online survey of ETCs from Arlington Transportation Partners’ database.

Arlington Business Leader Study 2007
CEO/COO level executives – paper and online survey of list obtained from Chamber of Commerce

ACCS Commuter Stores Surveys 2007 and 2009
Brief intercept surveys of customers at four CommuterStores coupled with longer internet survey

ACCS CommuterPage.com Surveys 2007 and 2009
Pop-up surveys on main pages of web site

CommuterDirect.com Online Fare Purchase Service Studies 2007 and 2008
Online surveys of individual users and corporate users from customer database

Arlington STAR (Paratransit) User Satisfaction Survey 2008
Paper survey mailed to STAR user database

Arlington Transit Rider Survey 2008
On-board paper survey of ART bus riders

BikeArlington and WALKArlington Studies 2008
Online surveys of participants in bike and walk events plus program mailing lists

Commercial Building Survey 2008
Selected commercial buildings at varying distances from Metrorail, bus service, and urban centers: interviews of property managers, interviews of employers, online survey of employees.

ACCS Making an Impact Report 2008
Major report of ACCS services and
benefits, including calculation of trips reduced, VMT reduced, fuel saved, and emissions reductions. An impact calculator spreadsheet model was developed based upon inputs from the prior surveys of programs. See results in call-out box above.

Selected Results, Impacts and Benefits
Customer Feedback – Our Net Promoter Scores

One major and consistent finding has been that our customers greatly value our services, an extremely valuable piece of information for the County. Our Net Promoter Scores (percent of those who would recommend a service minus those who would not) compare very favorably with the best private industry leaders (source: Satmetrix, 2011 Benchmark Study of U.S. Consumers).

Insert graph Net Promoter Scores here

Benefits to Residents and Commuters:

- 78% of Arlington residents are satisfied with the County’s transportation system and services, and the research documents that transportation satisfaction provides a direct boost in residents’ perception of their quality of life – a major finding for TDM. Also double digits higher than for most such studies in urban areas.
- 26% of Arlington residents used a service of Arlington County Commuter Services, and of those 40% took action to change their travel.
- 90% of Commuter Store customers had good experience in the store, and 12% switched mode due to Commuter Stores’ help.
- 55% of CommuterPage.com users made changes in how they travel to work since they first started using CommuterPage.com. CommuterPage.com was instrumental in 70% of those changes.
- 80% of Arlington Transit users are satisfied with the service.
- The success of Arlington’s multi-modal transportation system and TDM services are borne out on the ground. Traffic volumes on most major arterial streets in Arlington have either held steady or declined over the past ten years, in spite of major growth in employment and population and growing congestion in surrounding jurisdictions.

Benefits to Business

- 87% of Arlington business leaders say that Arlington is a good place to locate a business, and the more satisfied they are with the multi-modal transportation system and services, the more likely they are to cite Arlington County as a good place to locate a business.
- Arlington business leaders most often cite the quality of the transportation system and services as the leading reason they rank Arlington as a good place to locate a business.
- Arlington employers say commuting services result in significant benefits to their businesses, including improved employee morale, easier recruitment and retention, increased productivity, and less parking demand.
- At offices where commuting assistance services are offered, twice as many employees use mass transit or ridesharing and 30% fewer drive alone to work, compared to offices where commuting assistance is not offered.
- Residential Property Managers find that providing transportation assistance services helps them attract and retain tenants.
- Arlington County business leaders understand the importance of a comprehensive transportation system. They say the County should invest nearly 30% of its transportation budget in non-road transportation infrastructure and services and nearly 20% in information and support services (TDM).

Summary and Future Directions

To date the ACCS research program has documented a wide range of qualitative and quantitative benefits of TDM services to residents, employees and businesses. Perhaps most compelling is the direct boost that the transportation system and services provide to residents’ perception of their quality of life and to business leaders’ per-
ception of the County as a good place to locate a business and their perception of TDM services as a direct benefit to their business operations. TDM is clearly established as an important tool of economic development in a region plagued by traffic congestion. These findings elevate TDM as a principal service benefiting the County’s most core missions to its citizens and businesses.

All of this has served to support continued growth of the ACCS program even in times of economic distress. Arlington’s pedestrian-friendly, multi-modal transit-oriented “urban villages” have proven to be among the hottest real estate locations in the DC region and the U.S. In part, because of its strong investment in multi-modal infrastructure and TDM services, Arlington is clearly well poised to support future growth and to maintain its market appeal without significant traffic increases.

Future ACCS research efforts will focus more fully on such topics as marketing to tech savvy creative-class professionals, building the culture of walking and bicycling as part of the successful urban environment, and documenting the return on investment in TDM. In particular we will seek to monetize the value of TDM in such areas as individual and public health, community and social benefits, safety, economic and business vitality, and transportation operations. We welcome collaboration with others working on similar issues of vital importance to American communities.

Howard Jennings is Director of Research and Development for Arlington County Commuter Services in Arlington, Virginia. He is an 18 year veteran of TDM, former Executive Director of Ridefinders in Richmond, VA; Account Supervisor for Siddall Mateus and Coughter Advertising of Richmond, VA; and is a member of ACT’s Public Policy Council and the TDM Committee of the Transportation Research Board.

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The 2012 ACT International Conference will be held in Savannah, Ga., July 29 – August 1, 2012 at the River Front Plaza, Hyatt Regency Savannah.

Stay tuned to www.actweb.org for details and updates throughout the year!
Encouraging individuals to change the way they travel to work is a challenge. One option is to offer an incentive to drivers to try an alternative mode, but does the new behavior last once the incentive ends? The Clean Air Campaign, in conjunction with the Georgia Department of Transportation, implemented the Cash for Commuters program to try to change solo commuters’ behavior. And the surveys say: “It works!”

In a city where the daily commute ranks among the nation’s worst, The Clean Air Campaign (CAC) in partnership with the Georgia Department of Transportation (GDOT) are constantly working to reduce the number of cars on Atlanta’s roadways. These strategies include targeted financial incentives. One such program, Cash for Commuters (CFC), offers a cash incentive to commuters who are willing to make the switch from driving alone. The program offers CFC participants $3 a day – up to $100 – for agreeing try an alternative mode and log their commute patterns for 90 days. Initially launched in 2002 as a program targeting drive-alone commuters during smog season, CFC became a year round program in 2006.

Measuring the short and long term effects of the CFC program has been an ongoing effort undertaken by GDOT and its measurement and evaluation contractor, the Center for Transportation and the Environment (CTE). To date, CTE has conducted several surveys of CFC participants at varying stages following program completion. A primary goal of these evaluations is to determine the rate at which alternative mode use has continued for the more than 30,000 participants that have completed the program since 2002.

The first evaluation covered CFC participants that completed the program between October 2002 – March 2003. CTE surveyed these participants at 3 different intervals after program completion: 3-6 months, 9-12 months, and 18-21 months. The second evaluation covered CFC participants that completed the program between May 2003- October 2003. CTE contacted these participants 6 months after they had completed the CFC program. The most recent evaluation covered CFC participants that completed the program in 2007 and 2008. CTE surveyed these participants 18-24 months and 3-6 months, respectively, after program completion.

CTE’s evaluations are intended to capture a true snapshot of the desired change in driver behavior generated by the CFC program. Through these surveys, CTE asks participants to provide information on their commute habits before they joined the program, during the program, and after graduating from the CFC program. The results are compelling.

In both the short and long term evaluations, CTE has noted high rates of continued alternative mode use by participants after they have completed the CFC program. Table 1 shows a complete list of the continued alternative mode use among all previously surveyed CFC participants. In the most recent evaluation, nearly three-quarters (74%) of 2007 CFC program participants continued using an alternative mode 18-24 months after completing the program. Similarly, 69% of 2008 CFC graduates continued using an alternative mode 3-6 months after completing the program.

The continued use of commute alternatives translated into significantly fewer drive alone commute trips for CFC program graduates. The 2007 program participants as a whole made 83% of their weekly commute trips by driving alone before they enrolled in the CFC
program, as shown in Figure 1. While participating in the program, only 8% of these weekly trips were drive alone. Eighteen to twenty-four months after the completion of the CFC program, drive-alone trips had risen, but still accounted for only 37% of weekly trips made by the 2007 respondents.

The pre-program and during-program commute profiles were much the same for the 2008 program participants. As shown in Figure 2, 2008 participants drove alone for 87% of their weekly trips before enrolling in the CFC program and made 12% of their trips by driving alone while participating in the program. Three to six months after completing the program, they made 42% of weekly commute trips by driving alone, about half of the pre-enrollment percentage.

Given these results, the CFC incentive program is a successful tool in helping Atlanta drive-alone commuters try alternative modes. Moreover, a significant number of these commuters have stuck with alternative modes months and even years after the incentive has ended. This success can be attributed to a number of factors.

Understanding What Works

Since 2006, CAC’s marketing message has maintained a focus on the cost savings commuters derive from using alternative modes (less vehicle wear and tear, shared fuel costs, etc.,) versus highlighting the immediate return from the incentive. As a result, fewer and fewer participants credit the $3 incentive as their reason for trying a new alternative mode, instead citing the overall reduced costs.

In earlier evaluations, roughly 40% or more of respondents stated the availability of the $3 incentive influenced them to start using a commute alternative. In CTE’s most recent evaluation of 2007 and 2008 CFC participants, that number dropped to 20%. Saving money was also the primary motivator noted by participants in 2007 and 2008 when CTE asked them why they continued or increased their use of alternative modes after the program ended. The participants’ recognition of the cost savings offered by alternative mode use is helping to sustain their long-term behavior change.

Another key component to the continued success of the program is the availability of additional incentive programs to participants after they have completed the CFC program. CFC is one of three programs that make up CAC’s Commuter Rewards portfolio. Each of the components, CFC, Carpool Rewards, and Commuter Prizes, is a stand-alone program that features its own set of rules and procedures. While CFC targets drive alone commuters, Commuter Prizes and Carpool Rewards offer incentives to motivate those who are already using commute alternatives to not only continue their habits but to increase their overall use. More than two-thirds of commuters who completed the 2007 and 2008 CFC program reported that they went on to participate in one of the two additional Commuter Rewards incentive programs. Not surprisingly, these commuters use alternative modes at a higher rate than those that do not.
go on to participate in the other two incentive programs.

Enhancing the Program

CTE’s surveys also identified commuters who completed the CFC program and then decreased or stopped using alternative modes. CTE asked these commuters specific questions in an effort to find out the primary reasons for this behavior change.

The loss of a carpool partner and a change in the respondents’ work schedule or work location were the top reasons for both 2007 and 2008 CFC participants for stopping or decreasing the use of alternative modes. The fact that their behavior change was based on personal circumstances, not with dissatisfaction with the program or with the alternative mode, makes these commuters a prime target market for the Atlanta TDM Community to re-engage them in TDM programs.

Through the evaluation of commuters who completed the 2007 CFC program, CTE also noted that 26% had stopped using commute alternatives within the 2 years following completion of the program. Of this 26%, more than half (53%) had stopped using alternative modes within six months of completing the program with the remaining 47% stopping within a year of program completion. This suggest a substantial portion of the decline in alternative mode use comes soon after program completion and further drop-off is much more gradual.

The combination of these two factors: 1) personal reasons for stopping or reducing alternative mode use, and 2) the majority of participants stopping or decreasing their alternative mode within the first six months to a year after completing the program, led to the development of a long-term follow up methodology for CFC graduates. Based on the survey data, we believe that with some assistance these commuters can be reintroduced to commute alternatives. These retention efforts are in the early stages of implementation, but Atlanta’s TDM community is optimistic that it will play an integral role in the ongoing promotion of alternative mode use.

Bracing for the Unexpected

There are a number of external factors that can influence commuters’ interest in alternatives to driving alone. For example, it is crucial to identify how commuters are impacted when unemployment is on the rise and gas prices are fluctuating. CTE’s most recent evaluation provides some insights into the extent these external factors can affect commuter behavior.

In 2008 the price of gas soared to record highs, greatly affecting the Atlanta region and its commute options programs. In addition to the general nationwide spike in gas prices, the region was affected by a local gas shortage following damage to oil pipelines caused by Hurricane Ike in September 2008. These events prompted record enrollment and participation in the CFC program.

When asked a general question regarding what factors led to using an alternative mode, 46% of 2008 program participants declared high gas prices as their primary motivation. Similarly, when asked specifically how important gas prices were in their decision to start using an alternative mode, 95% of commuters who completed the CFC program stated it was somewhat or very important.

The 2008 CFC participants that cited gas prices as a reason to begin using alternative modes stopped using these modes at a much higher rate than those participants that did not cite gas prices as a factor for beginning to use an alternative mode. While only 25% of CFC participants who did not mention being influenced by gas prices stopped using an alternative mode 3-6 months after completing the program, 38% of the participants who...
were influenced by gas prices stopped using an alternative mode. The influence of gas prices also affected the frequency of alternative mode use. The 2008 CFC participants not influenced by gas prices reported using an alternative mode an average of three days a week compared to the two days a week average reported by those participants specifically influenced by gas prices.

The influence and impact gas prices had on 2008 CFC participants led to the conclusion that in instances where participation is affected by unique external factors, the messaging may need to be adapted to really emphasize the long term benefits of alternative mode use.

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What Does It All Mean?

After nearly a decade of growing participation, the Cash for Commuters program has enjoyed significant success in the Atlanta region. CTE’s diligent measurement of program results has proven that drive alone commuters are willing to make the switch to a cleaner commute option—and, more importantly commuters stick with alternative mode use long after the incentive is no longer available.

Emily Gray is a Project Manager at the Center for Transportation and the Environment in Atlanta, Georgia. She can be reached at (706)307-0656 or emily@cte.tv.
Using Performance Measurement as a Tool to Demonstrate TDM Success

By Frank T. Mongioi, Ryan Thompson and Sonya Suter

Over the past several years, through the country’s economic struggles and recession, we began to see a growing trend in efforts to do more with less. With limited or even shrinking financial resources, funding agencies continue to ask questions about efficiency, financial accountability and the value of investments. Performance measurement can be the solution to answer those questions. However, there has not always been a clear answer on the best way to do measure TDM programs. In fact, programs around the country continue to contemplate the question, how do you determine a program's success? Even agreeing on the formulas, calculations and methodologies behind the examination of TDM results has generated tremendous dialogue. Fortunately, the industry is moving in the right direction of using performance measurement as a tool to demonstrate the value of investments and to also develop efficiencies, all for the purpose of improving commuter services.

What's All the Fuss about Performance Measures?

Limited funding has elevated performance measurement as a critical component to demonstrate value for many transportation investments, TDM notwithstanding. Within the transportation industry, signs indicate that performance measurement is expected to play a greater role in the next U.S. surface transportation reauthorization legislation. Noted recently in Environment and Energy Daily, “As part of the renewal of the surface transportation bill, known as SAFETEA-LU, the Obama administration has proposed a $119 billion transit investment over the next six years as well as $53 billion for the development of high-speed and intercity rail. But to convince governments and private partners to invest in the projects, Bipartisan Policy Center Transportation Advocacy Director JayEtta Hecker said Congress would need to craft performance requirements for the program. Creating program metrics would increase the policy's credibility, she said, which is the first step in securing the necessary financial backing.” It is expected then that performance measurement will become even more important to the TDM industry moving forward.

What Counts as a TDM Measure?

In essence, performance measures provide documentation of results and progress relative to an agency, program, or organization goal or objective. The Federal Highway Administration (FHWA) defines performance measures as “the use of evidence to determine progress toward specific defined organizational objectives.” More specifically, a ‘good performance measure’ can be considered one that is meaningful to the customer, addresses how well goals are being met, is simple and logical, shows a trend, is clearly defined, and is timely.

There is no question that establishing TDM measures can be challenging. Given the difficulty of assessing the effects of education, marketing and outreach initiatives on changing travel behavior, TDM measurement is no easy task. Unlike a new transit
route or roadway investment, where changing ridership, travel speeds or delay can be calculated for a discrete project, TDM efforts typically involve promotion of a wide range of options across a broad area. Development of performance measures and establishment of valid methodologies and procedures to assess impacts therefore requires special attention for TDM programs.

For TDM programs, performance measures include any metric or indicator that documents the progress in the promotion of alternative modes in order to reduce single occupant vehicle (SOV) travel, vehicle miles traveled (VMT), and greenhouse gas (GHG) emissions. There are several general categories of performance measures most recognized as suitable for TDM programs, including inputs and outputs, outcomes or direct effects, and cost-effectiveness. The table below outlines types of performance measures for TDM, their purpose, and specific examples of those measures.

Selection of performance measures depends greatly on the nuances of a program, as well as the vision and high level goals of the funding agency or government organization that is managing the program. Outputs or activity-based measures like the number of outreach events or rideshare registrants may be strong supporting indicators and may help support program planning and strategic management. They can be tied to higher-level goals that correspond to agency priorities, and they may also reveal level of effort for program elements and ultimately, return on investment. Having a set of performance measures that covers the range of activities, outputs and cost-effectiveness will help to reveal this connection.

### TABLE 1: Types of Performance Measures for TDM Programs

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<th>Performance Measure</th>
<th>Purpose</th>
<th>Example</th>
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| Input Activity Measures             | Shows quantitative data on the number activities or efforts initiated by the program. Refers to actions or activities on the part of the program. | • Number of employer outreach events held  
• Number of presentations given  
• Number of brochures distributed  
• Number of calls made by sales staff to businesses |
| Output Activity Measures            | Shows quantitative data on the number of activities or results initiated by the customer or client, often in response to the program’s input activities. Refers to actions or activities on part of the client or customer. | • Number of hotline calls received  
• Number of ride match applications received  
• Number of web hits online  
• Number of guaranteed ride home sign ups |
| Outcome/Direct Effect Measures      | Quantifies the results of the input and output activities. Often a result of extrapolating the input or output data. | • Single occupant vehicle (SOV) trips reduced  
• Parking spots saved  
• Vehicle miles traveled (VMT) reduced  
• Greenhouse gases reduced |
| Cost Effectiveness Measures         | Associates a dollar amount with each input or output activity and each outcome measure to show the level of effort associated with each action. Sometimes a result of extrapolating the input, output or outcome data. | • Cost per rideshare application  
• Cost per employer sign up  
• Cost per VMT reduced  
• Cost per carpool formed |

### Following the Trends in TDM Performance Measurement

One of the most notable trends in performance measurement today is simply that its use as a tool in TDM is increasing. Recently
we have found that many TDM programs are well on their way to analyzing, measuring, evaluating and communicating their own programs’ effectiveness, even though there is no “one-size-fits-all” or industry standard to turn to. From reviewing performance measurement at a number of leading programs in Georgia, California, New York, Washington D.C., Washington State, and Florida, we have seen some common practices and also some unique approaches. For instance, many programs are reporting on the same key measures (such as vehicle miles reduced or alternative mode usage). However, the methodology for evaluating those impacts often varies. Some programs use ridematching software to calculate direct or assumed impacts while others use commuter surveys to build assumptions about program usage. As we increasingly focus on performance, we are also seeing that more and more programs are turning to commuter or participant surveys to better estimate their impacts.

Moving Towards Return on Investment Analysis

With the growing interest in doing more with less, the industry is moving towards looking at return on investment as a key performance indicator. Measuring the level of effort used can reveal a lot about a TDM program’s level of efficiency (increasing or decreasing) and how decisions about outreach efforts will impact the bottom line.

Using return on investment tools can also help a program become more effective. For instance, TDM programs can examine the level of effort used to form a carpool or vanpool. Typical activities that result in the formation of a new carpool or vanpool range from interaction with an employer to working with their employees. To achieve the necessary level of interaction requires calling companies individually, scheduling meetings, maintaining relationships, establishing services, holding commute fairs or transportation events, assisting employees to sign up for ride matching or other services, and providing customer service and incentives to employees. Dissecting and analyzing the level of effort, and assigning costs to each part in this process can help reveal leading indicators on return on investment, including: cost per rideshare application, cost per carpool formed, and cost per VMT reduced.

The costs should ideally trend downwards as programs become more efficient in their outreach and results improve. If the costs are not trending downwards, the return on investment measures will help TDM practitioners and managers adapt their programs and develop strategic plans to manage programs more efficiently with limited funding. After analyzing level of effort, program effectiveness can be compared with outreach costs to determine which type of outreach is most appropriate in which area.

These strategic outreach decisions are most effective and most useful when backed by data on costs and return of investment.

The Future of TDM Performance Measures

We are now reaching a stage where interest in performance measurement has turned to comparisons between programs, peer-to-peer exchanges, and studies on national best practices. We are seeing a demand for national standards in measurements and methodologies. Many programs are now beginning to ask if their programs are as cost-effective as others, and if not, what lessons can be learned from those successful programs on how to get the most “bang for the TDM buck.” The only way to share success stories and ideas on cost effectiveness is to begin sharing our evaluation information on our programs’ performance. The Center for Urban Transportation Research (CUTR) at University of Florida has begun that very process.

Led by Phil Winters, CUTR’s Project UCARE (Uniform Cost Accounting and Reporting Elements) is essentially a pilot test of a uniform reporting system for commuter assistance programs. The pilot is being developed in response to growing interest in assessing and demonstrating the value of commuter assistance programs to manage travel demand. Any involvement in the pilot and any resulting systems would be entirely voluntary. A reporting system of this capac-
ity would help our industry to benchmark our programs and find new ways to improve performance. By evaluating how well our TDM programs’ strategies are working, we can continue to improve our services for our customers and ultimately encourage more positive changes in travel behavior.

It seems evident that we will need to continue to consider, analyze and perfect how accomplishments resulting from TDM programmatic investments can be illustrated more clearly. This is not just relevant from a financial perspective, but is growing in national importance in terms of credibility, transparency and program accountability.

For questions, to discuss where your program is headed, or to share unique performance measurement tools used by your program, feel free to contact the authors.

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Ryan Elizabeth Thompson is a Senior Associate at ICF International with five years of experience in travel demand management, including program and policy best practices analysis, program implementation and operations, and program evaluation. She is also a member of the 2011 class of ACT’s Leadership Academy and was recently elected Secretary for the Chesapeake Chapter of ACT.

Sonya Suter is a Research Assistant at ICF International whose TDM experience includes program analysis and evaluation as well as work with the 511NY Rideshare program in the downstate region of New York State.
There is growing interest in the concepts of sustainability, livability, and sustainable transport. Sustainability balances economic, social and environmental goals and objectives, including those that involve indirect and long-term impacts, as indicated in Table 1 and Figure 1. Livability refers to the subset of sustainability impacts that directly affect community members. They generally share the same objectives, but often with somewhat differing perspectives and priorities. For example, both justify efforts to reduce pollution, although sustainability focuses on climate change emissions while livability focuses on local air and noise pollution.

Sustainability emphasizes the integrated nature of human activities and therefore the need for coordinated planning among different sectors, groups and jurisdictions. It expands the objectives, impacts and options considered in a planning process. This helps insure that individual, short-term decisions are consistent with strategic, long-term goals.

Table 1: Sustainability Goals (STI 2008)
(Italics indicates livability objective)
Sustainable transport planning recognizes that transport decisions affect people in many ways, so a variety of objectives and impacts should be considered in the planning process.

Transportation demand management (TDM, also called mobility management), includes various strategies that encourage more efficient travel activity. It includes improvements to alternative modes (walking, cycling, ridesharing and public transit), incentives to encourage user to choose more efficient travel options (e.g., commute trip reduction programs; efficient road, parking, insurance and fuel pricing; and high occupancy vehicle priority in traffic), and smart growth development policies that create more accessible communities.

TDM tends to provide a wider range of benefits than conventional transport system improvements. For example, roadway expansions tend to increase motorist comfort and reduce traffic congestion. More efficient and alternative fueled vehicles conserve energy and reduce pollution emissions. By improving travel options and reducing total vehicle travel, TDM solutions can provide a much broader range of benefits, as indicated in Table 2. Not every TDM strategy provides all of these benefits, but most provide several. Many of these benefits are overlooked or undervalued by conventional planning.

Table 2: Comparing Strategies (Litman 2009)

<table>
<thead>
<tr>
<th>Planning Objective</th>
<th>Roadway Expansion</th>
<th>Efficient and Alt. Fuel Vehicles</th>
<th>TDM Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase user convenience and comfort</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Congestion reduction</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Roadway cost savings</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Parking cost savings</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Consumer cost savings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduced traffic accidents</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Improved mobility options</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Energy conservation</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Pollution reduction</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Physical fitness and health</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Land use objectives</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

In contrast, TDM benefits tend to increase over time. For example, the long-run impacts of price changes (such as road tolls, parking fees and increased fuel prices) are typically three times higher than the short run effects, as consumers take these impacts into account when deciding where to locate or what type of vehicle to purchase, and major transit improvements and smart growth land use policies may take decades to achieve their full impacts on the transport system.

For these reasons, TDM policies and projects tend to receive greater support if evaluated using a sustainability planning framework which considers diverse, indirect and long-term impacts.

Performance Indicators

Performance indicators (also called measures of effectiveness) are specific measurable outcomes used to evaluate progress toward established goals and objectives. A
Performance index is a set of performance indicators in a framework designed to facilitate analysis.

Performance indicators are widely used in planning. Most indicators currently used to evaluate transport system performance, such as roadway level-of-service and average traffic speed primarily reflect automobile travel conditions. This tends to favor automobile-oriented improvements and undervalues alternatives. For example, roadway level-of-service defines transportation problems primarily in terms of motor vehicle congestion delays, and so recognizes no value of improving walking and cycling conditions, or better public transit service except to the degree that they increase automobile travel speeds. Fortunately, more comprehensive performance indicators are becoming available that better reflect the full value of TDM strategies.

The new Highway Capacity Manual (TRB 2010) includes multi-modal level-of-service indicators that can be used to evaluate transport system performance from various perspectives. For example, planners can now report bottlenecks to walking, cycling and public transit travel, not just automobile travel, and evaluate ways to improve alternative modes.

In addition, sustainable transportation indicators can be used to evaluate other types of impacts, besides travel speeds, including user affordability, accident risk, infrastructure costs, physical fitness and health, Table 3: Key Sustainable Transport Goals, Objectives and Indicators (STI 2008)

This table summarizes sustainability goals, objectives and performance indicators.
energy use, pollution emissions, and habitat impacts.

In recent years several organizations have worked to develop appropriate sustainable transportation indicator sets which balance the desire to be comprehensive with practical constraints, including limited data and the need for analysis results to be understandable to a general audience (Litman 2010). Some of these efforts are more successful than others (Litman 2008). Some fail to reflect the full range of sustainability impacts, for example, by focusing on environmental objectives but ignoring others such as social equity or safety. Some simply consist of a list of desirable policies and outcomes, which double-counting some effects and overlook others. Some are theoretically beautiful but require unavailable data, or rely on complex computations and produce results that are not intuitively understandable.

Table 3 summarizes a practical set of sustainable transport goals, objectives and performance indicators developed with the support of the Transportation Research Board Sustainable Transportation Indicators Subcommittee (STI 2008).

Sustainable transportation indicators can be used in various ways to evaluate TDM policies and programs. They can help define problems, compare TDM solutions against alternatives, and track a community's progress toward sustainability. They can indicate when a solution to one problem exacerbates other problems facing society, and help identify true win-win solutions, for example, the congestion reduction strategies that also help improve mobility options for non-drivers, address parking problems and reduce pollution emissions (Litman 2009). In most cases, sustainable transport planning increases support for TDM solutions because it recognizes the many benefits they can provide.

Todd Litman is founder and executive director of the Victoria Transport Policy Institute, an independent research organization dedicated to developing innovative solutions to transport problems. He chairs the Transportation Research Board Sustainable Transportation Indicators Subcommittee. His research is used worldwide in transport planning and policy analysis.

A Collection of Sustainable Transport Resources

Click on any link highlighted in gold to point your web browser to the resource.


SUMMA (Sustainable Mobility Measures and Assessment) is a European Commission (DG-TREN) sponsored project to define and operationalize sustainable mobility.

STI (2008), Sustainable Transportation Indicators: A Recommended Program To Define A Standard Set of Indicators For Sustainable Transportation Planning, Sus-

Sustainable, Low Carbon Transport is a partnership of more than 50 major international organizations. Its work program includes an effort to improve transport-related data (www.sutp.org/slocat/work-program/transport-data-and-ghg-assessment).

TØI (2009), Indicators For Sustainable Urban Transport – State Of The Art, Norwegian Public Roads Administration; at www.toi.no/article27829-29.html.

Measuring Performance of Commuter Assistance Programs in Florida

By Philip L. Winters and Michael Wright

Several years ago, the Florida Department of Transportation (FDOT) decided to take a statewide approach to evaluating the commuter assistance programs (CAPs) to help CAPs improve performance and report the total impacts at the state level. The following summarizes the process used, the performance measurements selected, and the next steps.

The Florida DOT is constantly striving to provide efficiently and effectively for commuter assistance. According to Michael Wright, FDOT Statewide CAP & Florida RTAP Manager, “We are on a mission to maximize the limited amount of funds available for these services and believe that the measuring of program performance is key to ensuring that efficiency goal.”

Since the commuter assistance programs are not centralized at the statewide level, but instead regionalized to provide for better customer service and interaction, FDOT is seeking a toolbox of measures to evaluate the programs and provide constructive recommendations on how to improve service and cost effectiveness. Florida commuter assistance programs vary widely from multi-modal South Florida with managed lanes to the far-flung communities in the Florida Panhandle. Florida’s performance measures need to take those variations and differences in to account.

The process began with a series of interviews with FDOT program managers and CAP staff members by the Center for Urban Transportation Research (CUTR) at the University of South Florida. The purpose of this task was to determine what those stakeholders wanted from a new set of evaluation procedures. The following were among the factors deemed important to the stakeholders:

- Take into account the difference between districts and weight performance measures appropriately. This could mean that some districts emphasize passenger trips provided (i.e., mobility) over vehicle trips reduced (i.e., congestion).
- Focus on quantitative performance measures including cost/benefit information to better communicate the value of TDM.
- Maximize use of software and technology to automate quantitative performance measure calculation, when possible.
- Provide qualitative evaluation of specific focal areas to improve performance.
- Be accompanied with training and technical assistance for using the results to develop annualized, strategic, long range work plans.
- FDOT should support the development of standard TDM performance measures (e.g., definitions, data collection procedures, etc.) at the national level to allow the benchmarking of performance with peers.

Concurrently with the CAP and FDOT District interviews, CUTR and its subcontractor, ESTC, conducted a review of performance measures and methods being used by comparable programs outside of Florida. The review included evaluation efforts in five U.S. cities (Atlanta, GA, Birmingham, AL, Portland, OR, San Francisco, CA, and Washington, DC), and two international programs (Canada and Sweden).

The key take-away items from this review of the state of the practice were:

1. Focus on placement: Instead of fo-
cusing on the number of database members as a performance measure and number of commuters switching modes, many agencies focus on the effectiveness of services by tracking placement. Specifically, they “count” those placements in which the registrant switched from single occupant vehicle commuting.

2. Cost-effectiveness measures: To demonstrate the validity of TDM as a set of solutions to common transportation system problems, many agencies focus on reporting cost of achieving impacts.

3. Changes in scale: To make impact figures more tangible, many agencies “scale back” the units of measurement. So instead of talking about millions of VMT or vehicle trips reduced, they report numbers on a per-commuter or per-100-employees basis.

4. Employer partnerships: While the number of employer contacts does show a certain level of effort, most agencies are primarily concerned with how many of the employers end up working with the CAP to develop programs for their employees.

5. Awareness levels: While some CAPs in Florida do conduct separate evaluations/surveys to determine general public awareness, other agencies outside of Florida make it a key performance measure and equate it to the marketing campaign’s effectiveness.

Top Nine Evaluation Methodology Tips

Based on the review of other contemporary evaluations, the evaluation methodology should include:

1. Focus the evaluation on measuring fulfillment of stated objectives, be they quantitative or qualitative.
2. Assure the methodologies are rigorous and transparent. Methods should arrive at accurately, objectively and consistently measured impacts. This means that data sources, calculation methods and reporting formats should be documented.
3. Take “output” and “outcome” performance measures into consideration. In considering both types of results, the overall evaluation framework should address a range of “assessment levels” (e.g., awareness-interest-desire-action). For example, the Swedish SUMO methodology uses 11 assessment levels.
4. Use a consistent approach to evaluate program elements and means to avoid double counting. In Washington D.C., this means identifying the target population and applying consistent placement rates and VTR factors to each.
5. Attempt to estimate all relevant measurement factors with recent, local data, rather than relying on national defaults or case studies. This includes trip distance, car/vanpool occupancy, rideshare frequency, placement rates and even trip reduction.
6. Include relevant behaviors that can affect program outcomes. For example, consider the access mode of commuters to vanpools and transit, if measuring impacts on air quality.
7. Recognize the importance of customer retention to overall growth. The cost of attracting new customers is likely to be much higher than the cost of retaining an existing customer. Understanding why customers originally requested assistance by the CAP, why they left either the CAP’s program or stopped using a particular mode, and what they went on to do after they left is essential for improving performance.
8. Plan for changes in data availability, evaluation method, and advances in tools. Secondary data sources such as the American Community Survey provide a wealth of socioeconomic data on commuters at a finer grain than can be collected by the CAP (albeit with a one-year lag) that can supplement the evaluation.
9. Understand the limitations of the evaluation and the trade-offs required between precision and costs. There are still several outstanding evaluation issues that will continue to be debated, including:

- How to measure the indirect impact of TDM programs among those that do not directly contact the program
or its agents (TMAs, employers, etc.).

- How to quantify the role of mass marketing campaigns on influencing traveler behavior.
- How to distinguish the effects of a program from background conditions or context. (e.g., changes in gas prices, effect of unemployment levels on the transportation system)
- What decisions will be made with the information and what are the corresponding data needs to help provide information to decision makers. For example, doubling the precision will require a quadrupling of the data collected.

**Designing the Florida CAP Evaluation Process**

The Florida CAP performance measures were developed based on the input from FDOT and CAPs, lessons learned from other TDM evaluations, and currently available tools. These measures are based on the principles of developing a balanced set of a limited few vital measures; it is not an exhaustive list of all potential measures. The measures selected should produce timely and useful reports at a reasonable cost. The performance measures are shown in the following tables based on the “customer lifecycle” as explained below.

Table 1 shows the outputs provided by CAP or collected by CUTR via surveys on the CAP’s behalf. Table 2 lists the outcomes (as calculated by CUTR). Table 1 categorizes the outputs along the lines of a typical business model by breaking the customer life cycle into five distinct outputs or steps: reach, acquisition, conversion, retention, and loyalty. This means making a commuter or employer aware of your “brand,” informing them what the CAP has to offer, changing them to a commuter who reduces vehicle trips, and then keeping them as a loyal customer whose satisfaction with the products or services urges other commuters to partake of the products and services. This structure is based on the assumption that working through employers is simply a means of reaching the customer; the individual commuter and employer policies will affect commuter behavior.

To address the desire of the CAPs and FDOT Districts to automate the quantification of benefits, as well as disbenefits (societal costs), resulting from trip reduction strategies, CUTR will use a modified version of the TRIMMS® (Trip Reduction Impacts for Mobility Management Strategies) model to allow multiple-employer analysis based on identification of TDM programs identified by the CAP. This spreadsheet model was developed from the FDOT-funded Economics of Travel Demand Management: Comparative Cost Effectiveness and Public Investment study. It uses a methodology that combines academic and practitioner experiences within a theoretical framework that captures consumers’ price responsiveness to diverse transportation options by embracing the most relevant trade-offs faced under income, modal price and availability constraints.

**Next Steps**

As of August 2011, CUTR has completed the public surveys (e.g., gauge awareness) for six of the seven CAPs (Orlando area CAP was excluded due to a complete restructuring to a district-wide CAP). CUTR is also finalizing the phone/web-based customer surveys from most of the Florida CAPs. We expect the final report to be produced later this year.

To support the Florida CAP and District desires to allow benchmarking performance with peers, FDOT has also funded Project UCARE (Uniform Cost Accounting and Reporting Elements) under the National Center for Transit Research at the University of South Florida. The objective of Project UCARE is to develop and test a candidate reporting system that will accumulate commuter assistance program industry financial and operating results by uniform categories. The system will be designed so that it can be eventually implemented on an industry-wide basis. To ensure the feasibility of future implementation, the candidate reporting system will be tested for practicality and usefulness at selected operating sites.

Ultimately, the information collected
Table 1: CAP Outputs (1 of 2)

<table>
<thead>
<tr>
<th>Output</th>
<th>Performance Measure</th>
<th>What It Will Be Used to Measure</th>
<th>Collected by</th>
</tr>
</thead>
<tbody>
<tr>
<td>REACH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>Share of commuters aware of brand identity (brand to be determined by CAP to be CAP name or call to action (phone/web)</td>
<td>Commuter services awareness</td>
<td>General Public Survey</td>
</tr>
<tr>
<td>Output</td>
<td>Profiles of TDM elements for each employer-client (See Table 9 for data needs)</td>
<td>Employer outreach effectiveness (quantity-market penetration) Data will be used by CUTR to estimate cost/benefit of employer outreach program element using TRIMMS</td>
<td>CAP</td>
</tr>
<tr>
<td>Output</td>
<td>Number of employers with telework programs and total number of employee-trips reduced by teleworking</td>
<td>Employer outreach effectiveness (quality)</td>
<td>CAP</td>
</tr>
<tr>
<td>Output</td>
<td>Number of employers with compressed work week and total number of employee-days not traveling to work due to CWW for each of these types of CWW programs: 4/40, 9/80 and other</td>
<td>Employer outreach effectiveness (quality)</td>
<td>CAP</td>
</tr>
<tr>
<td>ACQUISITION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>Number of individuals requesting assistance</td>
<td>Interest in commuter services</td>
<td>CAP logs</td>
</tr>
<tr>
<td>Output</td>
<td>Number of total requests for assistance (i.e., capture repeat customers)</td>
<td>Level of effort in maintaining in commuter services</td>
<td>CAP</td>
</tr>
<tr>
<td>CONVERSION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Output</td>
<td>Percent of drive alone commuters shifting to a commute alternative</td>
<td>Effectiveness of commuter services in changing travel behavior</td>
<td>Database survey and General Public Survey</td>
</tr>
<tr>
<td>Output</td>
<td>Percent of commuters who currently use a commute alternative shifting to another alternative mode (e.g., from carpool to transit)</td>
<td>Effectiveness of commuter services in increasing higher occupancy customers</td>
<td>Database survey and General Public Survey</td>
</tr>
<tr>
<td>Output</td>
<td>Percent of commuters who currently use a commute alternative increasing their weekly frequency of commute alternative use (e.g., from carpool one time per week to carpool three times per week).</td>
<td>Effectiveness of commuter services in increasing frequency of use</td>
<td>Database survey and General Public Survey</td>
</tr>
<tr>
<td>Output</td>
<td>Number of vanpool passenger trips (directly operated and purchased transportation)</td>
<td>Vanpool program effectiveness</td>
<td>National Transit Database (NTD) report</td>
</tr>
<tr>
<td>Output</td>
<td>Number of vans operated in maximum service</td>
<td>Vanpool program effectiveness</td>
<td>NTD report</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RETENTION</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>Avoidable customer turnover</td>
<td>Measure of program growth</td>
<td>CAP</td>
</tr>
<tr>
<td>Output</td>
<td>Percent of non-SOV commuters who revert to SOV</td>
<td>Effectiveness of commuter services in retaining customers</td>
<td>Database survey and General Public Survey</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOYALTY</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>Overall customer satisfaction (with emphasis on quality, willingness to use</td>
<td>Customer satisfaction</td>
<td>Database survey</td>
</tr>
</tbody>
</table>
Table 2: CAP Outcomes  
(From the above outputs, CUTR will estimate the following outcomes)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Description</th>
<th>Effectiveness</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome</td>
<td>Vehicle trip rate per 100 commuters (peak periods and total)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Vehicle miles of travel (peak periods and total) per person</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Total and per person unlinked passenger trips (e.g., bike to bus then bus = 2 UPT)</td>
<td>Accessibility</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Total and per person passenger miles of travel</td>
<td>Accessibility</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Customer satisfaction</td>
<td>Overall satisfaction with the CAP programs and products</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Emissions reduced</td>
<td>Environmental impacts</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Energy reduced</td>
<td>Energy impacts</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Total and person commuter savings</td>
<td>Commuter impacts</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Duration of non-SOV mode</td>
<td>Effectiveness of retention efforts and impact on life cycle costs</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Benefit/Cost Ratio</td>
<td>Total costs and benefits from the employer outreach program</td>
<td>TRIMMMS model</td>
</tr>
<tr>
<td>Outcome</td>
<td>Cost-Effectiveness</td>
<td>Outcomes by cost over the useful life of the program</td>
<td></td>
</tr>
</tbody>
</table>
through an industry-wide reporting system will be designed to address the needs of:

- Individual commuter assistance programs for benchmarking and comparing their performance with other commuter assistance programs with similar characteristics.
- Transportation-related industry associations for monitoring industry performance and needs.
- Federal, state, and local government agencies for commuter assistance program industry analysis and financial assistance program administration.

NOTE: CAPs and funders (e.g., state departments of transportation) that would like to participate in Project UCARE should contact Phil Winters at winters@cutr.usf.edu.

Philip L. Winters, Center for Urban Transportation Research, University of South Florida and Michael Wright, Statewide CAP & Florida RTAP Manager, Florida Department of Transportation

Sources
