

# *the review*

North American edition  
Issue 12 – June 2014

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**Spotlight** Congestion management at NYC Airports

**Feature** The importance of reliability and resilience in transportation

New strategies for commercial rail

The voice of the Canadian transit industry



**Tackling capacity  
constraints at  
US airports**

## Welcome

**Hello and welcome to the latest edition of the Steer Davies Gleave North American Review. You'll notice that we've had a bit of a makeover - we hope that you like the new look!**

In this issue we begin a two-part series on the topic of transportation system reliability and resilience. You will find articles on traveler perception of reliability, managed lanes and the economic evaluation of transportation improvements that enhance resilience against natural disasters. The Review to follow later this year will continue this theme with further related articles.

This Review also includes articles on a range of other topics including ongoing TDM, TMA and active modes initiatives; issues in passenger rail planning and airport congestion management; development of a trip planning website for a transit authority; non-infrastructure options in regional and urban planning projects; a pedestrian plan for the city of Moscow; some interesting methodological topics; and others.

This is a time of significant challenges but also of exciting opportunities for the transportation profession. We hope this Review communicates our enthusiasm about working with you, our clients and partners, to meet these challenges and develop these opportunities. We look forward to receiving any feedback that you may have.



**Jon Bottom**  
Head of SDG USA

**Ian Druce**  
Head of SDG Canada



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[na.steerdaviesgleave.com/subscribe](http://na.steerdaviesgleave.com/subscribe)

## New faces



**Lisa Buchanan**  
North American Planning unit

Having identified significant opportunities for growth in the US, particularly in the TDM market, SDG is pleased to announce that Lisa Buchanan will now be leading the North American Planning business. Lisa is an international expert in travel behavior change with over 18 years' experience of developing and implementing programs to reduce car use. She has advised local, regional and central government in the USA, UK and Australia as well as private sector clients across a broad spectrum of behavior change studies. Lisa joins our team based in California.



**Erika Kampe**  
Senior Consultant

Erika joins us as Senior Consultant and will be working with the Glendale Transportation Management Association in California. Prior to this she was Program Manager for Transportation Solutions where she worked with employers, residents and students to encourage the use of transit, van/carpool, bike and walking as transportation modes in the SE Denver Metro Area.

We are delighted to welcome several new consultants who are currently seconded to the San Diego Association of Governments (SANDAG) in California where they are developing a new employer outreach strategy as part of a wider, regional transportation demand management program.



**Allison J. Richards**  
Principal Consultant

Allison joins as Principal Consultant working as Program Manager for the iCommute Regional Outreach effort and the Golden Triangle Construction Mitigation Pilot for SANDAG. She has most recently worked for Inland Transportation Services as a consultant to Los Angeles Metro for the high occupancy toll lane project. Allison's past experience includes managing multi-million dollar, government-oriented TDM programs, instituting new processes for efficiency and effectiveness.

### Leah Reyes & Puja Thomas-Patel Consultants

Leah and Puja join us as Consultants supporting Allison with the work at SANDAG.

More about our work with SANDAG follows in the article below.

## SDG and SANDAG

**The San Diego Association of Governments (SANDAG) has provided regional transportation demand management (TDM) programs and services since 1995.**

The TDM program, branded as iCommute, has undergone extensive evaluation over the last year with the help of Steer Davies Gleave.

SDG helped develop a new employer outreach strategy and is supporting its implementation throughout the San Diego region with an onsite program manager and two employer transportation liaisons. The strategy outlined several new or updated components for employer outreach, including: a customized sales methodology

and outreach approach and an employer prioritization framework. The goal is to measurably reduce overall VMT in the region.

In addition, the SDG team is developing and managing a unique pilot program that will combine construction information and TDM messaging in the University City area of San Diego. The aim is to ease congestion in an area with more than 35,000 employees and 25,000 University of California students, staff and faculty during a time when several large-scale transportation infrastructure projects will be constructed.

In addition to SANDAG, the SDG team is coordinating closely with Caltrans, employer associations, area stakeholders and other consulting firms.

## Past events

### 6th Annual Conference of the Society for Benefit Cost Analysis, Washington, DC 13-14 March 2014

The 6th Annual Society for Benefit-Cost Analysis conference was held on March 13-14 in Washington, DC. Attended by an international group of economists and policy experts, the theme of the conference was “Benefit-Cost Analysis for Evidence-Based Decision Making”.

Pierre Vilain delivered a presentation on “Cost-Benefit Analysis and Infrastructure Prioritization: Infrastructure Planning for Passenger Ferries in New York City”.

For Pierre’s full presentation visit:  
[www.steerdaviesgleave.com/sites/default/files/elfinder/ferry](http://www.steerdaviesgleave.com/sites/default/files/elfinder/ferry)

### MWA 2014 Waterfront Conference, NY, NYC 24 April 2014

The Metropolitan Waterfront Alliance’s 2014 Waterfront Conference, was held on April 24 on the Hornblower Infinity, which was docked at Hudson River Park in New York.

Pierre Vilain appeared on a panel at the conference to discuss “Getting to Transit Equity via Ferries: Transportation to and from the most transit-poor sections of New York City”.

For more information about the panel discussion visit:  
[www.waterfrontalliance.org/2014\\_Waterfront\\_Conference](http://www.waterfrontalliance.org/2014_Waterfront_Conference)



Participants meet to discuss funding NYC’s aspirational waterfront projects

### WTS Conference, Portland, Oregon 14-16 May 2014

The theme of this year’s Woman’s Transportation Seminar Annual Conference was “The power of connection” and sessions were held on mobility, community and innovation covering a broad range of topics and transportation modes. SDG’s Karen Crothers attended, delivering a presentation at the innovation session “Gleaning the Green – Discovering New Options in Project Funding”. Karen provided examples of transit funding mechanisms from the UK which may be transferrable to North America.

Karen’s presentation can be found here:  
[www.steerdaviesgleave.com/sites/default/files/elfinder/WTS.pdf](http://www.steerdaviesgleave.com/sites/default/files/elfinder/WTS.pdf)

## Project updates

### Comprehensive 2013 Citywide Ferry Study Update

Steer Davies Gleave led a multidisciplinary team to develop the 2013 Citywide Ferry Study (CFS) for the New York City Economic Development Corporation (NYCEDC). The recently published Preliminary Report was an ambitious strategic plan for expanding passenger ferry service in New York Harbor, including identifying the most promising new routes, an extensive analysis of ferries’ economic impacts, and detailed recommendations with respect to fare and subsidy policies.

Steer Davies Gleave’s work was explicitly meant to provide the basis for immediate action by New York City, which has taken a leading role in expanding a passenger ferry network that had been for the most part privately operated. Following the release of the Preliminary Report, departing mayor Michael Bloomberg extended the operating support for the East River Ferry service to 2019, a major success for waterborne transit supporters. Several weeks later, the new administration of Mayor Bill de Blasio also acted, extending support for ferry service to Rockaway through the Spring.



SDG developed the 2013 Citywide Ferry Study for NYC

## Upcoming events

### CUTA Annual Conference, Gatineau, Quebec 7-11 June 2014

SDG’s Rebecca Powell will be delivering a presentation on “The role of transit in city development – a European and Canadian comparison”. She will focus on the way in which transit plays an integral role in enabling North American cities to develop as more compact, high density, liveable centers with good mobility and a higher quality of life for the people that live and work there. In her presentation Rebecca will examine how transit is internationally recognized as a key enabler

to ‘unlocking’ site development potential, but its role can vary over different geographies. Benefiting from a long history of experience facilitating Transit Oriented Development, tried and tested European examples can provide lessons to help these North American transformations.

The presentation will compare and contrast two real examples of Transit Oriented Development and the role of transit within their planned multi-modal transportation systems: one from London’s Battersea Power Station and one from downtown Mississauga in Greater Toronto.



### SDG’s TDM team are on Twitter

If you would like to hear about our work in the realm of TDM as and when it happens you can now follow us on Twitter @SDGworld\_TDM



## Congestion management at NYC airports

“As the largest metropolitan area in the US, New York will continue to generate increasing levels of air travel demand”

**A federal ruling now pending for the New York region will likely signal the future of regulatory approaches to allocating scarce airport capacity in the US.**

By Steven Wainwright

In contrast to major hub airports in Europe and Asia, access to runway capacity at US airports has historically been largely unregulated. The major airports serving New York City, however, are an important exception. Federal legislation enacted in the 1960s imposed formal slot controls at LaGuardia, Kennedy, and Newark airports, along with Chicago’s O’Hare and Washington’s National Airport. More recent legislation has phased out many of these restrictions, but the threat of unacceptable congestion and delays has led the Federal Aviation Administration to impose temporary flight limits at all three New York airports. The agency is now developing a permanent rule to regulate their capacity going forward.

As the largest metropolitan area in the US, New York will continue to generate increasing levels of air travel demand, even despite the advent of competitive alternatives such as High Speed Rail and new intercity bus services. But geographic constraints and close proximity to highly populated areas have made airport expansion all but infeasible in the region.

The challenge in designing the new rule will therefore be to allocate the limited capacity in a way that provides for a high level of air service – flights to desirable destinations serving as many passengers as possible without unacceptable levels of delay – while promoting increased competition and preserving access for new entrants. Recent experience suggests that this will be a formidable task, as efforts to adopt market-based slot allocation mechanisms such as auctions have met with fierce resistance from the airlines in both Europe and the US.

Our aviation team is uniquely positioned to understand this complex problem, having authored the official

report assessing the impacts of revisions to the European Commission’s slot allocation regulations, modeled the impact of formal demand management policies for a major US hub airport, and advised on slot divestitures resulting from mergers and competition remedies.

In the future more US airports will face capacity constraints that cannot feasibly be addressed through new runway construction, and the outcome of the rulemaking process for New York will therefore likely signal the future direction of the regulation of scarce airport capacity in the US. We will continue to monitor these developments closely, making the case for more active use of demand management and policies that provide the best outcome for consumers, other key stakeholders and the industry as a whole.



**To find out more contact:**

Stephen Wainwright

e [stephen.wainwright@sdgworld.net](mailto:stephen.wainwright@sdgworld.net)



# New strategies for commercial rail

**Compared to other transportation systems, rail systems involve a complex interaction of demand, schedule design, operations, vehicles and infrastructure, which requires careful management to prevent problems across the system. Here we examine a number of techniques which can assist owners and operators in their management.**

By Stefan Reul

Population, lifestyles and travel behavior are changing, and increasingly people are looking for alternatives to the automobile. This presents an opportunity for rail and other transit providers, but it also requires new thinking based on a clear understanding of the requirements and preferences of potential riders.

Integrated fares and multimodal tickets, common in Europe, can attract additional riders and allow them to buy one ticket covering not only rail but also all their other local transportation needs for a journey, day, week, month or year. The traveler sees a “one-stop-shop” and, while these tickets can require significant back office effort to divide the revenues between operators, mobile and smart electronic ticketing can minimize the administrative effort. These new technologies provide us with much more detailed and cost

effective analysis of travel demand, including how passengers combine modes to make whole journeys, upon which we can base modifications to service programs.

Schedules can be improved by designing better rolling stock stop patterns, such as where two separate trains are replaced by one train which splits into sections at junctions to serve two routes.

Time spent waiting for a train is perceived to be significantly less attractive than time spent riding the train. This often suggests a focus on minimizing waiting time rather than just journey time, which can be achieved through integrated and coordinated scheduling. This can help trains run as frequently as possible, and only as fast as necessary. Systems optimized with this scheduling technique have symmetrical timetables with coordinated feeder service schedules.

New rolling stock offers improved customer comfort and amenities and can also help reduce cost and make rail even more efficient. Lighter vehicles, consuming less energy, and creating less wear and tear on the infrastructure, will help increase efficiency, extend life cycles and reduce track maintenance costs.

In some countries, authorities are defining schedule frameworks with train routes and service frequencies, and asking private sector bidders to provide the services. This requires the separation of infrastructure and service operation, but helps separate and allocate costs and revenues to services and routes. Better information on costs and revenues helps inform and make the case for strategic investment.

#### To find out more contact:

Stefan Reul  
e stefan.reul@sdgworld.net

#### Staff profile

Stefan Reul



#### What made you decide to work in a transportation consultancy?

The variety of projects in my first employment got me hooked and that is why I stayed in consulting in general.

#### Which city do you admire most for its transportation and why?

New York City for its subway system that has been there for what seems like forever. It operates as the backbone of the city with an amazing magnitude of transportation performance.

#### What is the most interesting/bizarre/exciting mode of transportation you have been on?

In Stuttgart, Germany you can take a nice round-trip starting out with LRT, switching to a funicular, walking through a cemetery to another LRT line, transferring to a rack railway and switching back to LRT. All with a single ticket and beautiful views of the city.

#### What project are you most proud to have worked on and why?

The 95 Express Lanes in Miami, Florida. Between the initial T&R study and the opening of Phase I it took only three years to analyze, design and implement one of the most successful congestion pricing projects in the USA.

#### What would you be doing if you didn't work in a transportation consultancy?

I'd be a carpenter. Taking a rough board and shaping the wood until a piece of furniture unfolds is similar to transportation consulting where we start with rough concepts and refine things into a final project.

#### What couldn't you live without?

A good glass of beer.

#### What is a major issue today in transportation?

People's travel behaviors are changing more quickly than ever. Yet capital investment is meant to last decades or longer. The challenge in the future will be to adapt the transportation infrastructure and services to this changing environment.

# Reliability and resilience in transportation



Transportation has traditionally been characterized in terms of the time, cost, comfort and other service attributes likely to be experienced when making a trip. It is increasingly recognized, however, that travelers make decisions based not only on the expected value of these attributes, but also on their variability.

Moreover, we have recently seen extreme climate events that have disrupted transportation operations over a wide area and an extended time. The importance of designing transportation systems that can fail safely and recover quickly from such events is being increasingly recognized.

Accordingly, we are pleased to begin a two-part series of articles on the topics of transportation system reliability and resilience.

This Review summarizes knowledge about managed lane choice; presents some empirical work on the value of reliability; and discusses including resilience as a factor in project evaluation. We plan to continue this series in the next Review edition, scheduled for later this year.

## Managed Lanes and traveler choice

**Over the last two decades, traffic in the United States has grown by more than 30% and with infrastructure investments not keeping pace, heavy congestion exists on most highways in metropolitan areas.**

By Christoph Vollath

This may explain why, over the last decade, transport planners have focused on managed lanes as a means of optimizing available capacity. On managed lanes, the toll is set high enough to avoid congestion, with the result that the toll commonly increases during peak hours and drops in off-peak periods.

However, toll transaction data on managed lanes reveals that a significant number of travelers pay \$1-\$2 for very small time savings. This is contrary to what we would expect, based purely on an assumed value of time.

To understand better how travelers make decisions in these situations, we carried out an internal Research and Innovation (R&I) project. We reviewed state-of-the-art research in the fields of travelers' valuation of

small travel time savings and other potential benefits of managed lanes.

Travelers might be willing to pay for small time savings for a number of reasons, including when their journey was urgent, or when it was important that they arrive at their destination on time.

We first examined stated preference data from a Texas A&M University study which showed that the value of time of travelers in urgent situations is higher than that of travelers in ordinary situations. Importantly, value of time was often higher for low income groups in urgent situations than for high income groups in non-urgent situations. This suggests that the majority of travelers on managed lanes are not those with high incomes, but those on an urgent trip, whatever their level of income.

However, while these findings suggest a substantially higher value of time for urgent trips, they do not explain why managed lanes are used even when the expected time savings are very small. We also examined a recent Texas Department of Transportation survey into travelers' motives for using managed lanes, which suggested that a second factor was important: travelers attach high value not only to travel time savings but also to increased travel time reliability, with the third most valued factor being a less stressful journey. Toll transaction data shows that managed lanes can in fact provide increased travel time reliability, but does not explain



directly either how travelers perceive reliability or how they change their behavior in response to a change in it.

Our internal project concluded that the relationship between perceived and actual travel time, and drivers' responses to them, requires further research. The next article describes how we have carried out the research, refining our capability for modeling managed lanes to take into account travel time reliability.



**To find out more contact:**

Christoph Vollath  
e christoph.vollath@sdgworld.net

**...the majority of travelers on managed lanes are not those with high incomes, but those on an urgent trip, whatever their level of income.**

## Traveler Perception of Reliability

**Research has been carried out for many years into the value of travel-time reliability (VOR), typically to estimate the cost of delays to the economy or to a transport operator, or to help develop a business case for new investment.**

By Lucile Kellis and David Cuneo

One focus of research into VOR has been on managed lanes. As the previous article notes, data from operational managed lane projects shows that some travelers are willing to pay for managed lane usage even when the expected time savings are very small. One possible explanation for this is that they attach a value to higher travel time reliability versus travel time alone.

Steer Davies Gleave developed a new stated preference (SP) survey aimed at quantifying the VOR for a proposed managed lanes project. In the survey, participants were asked to consider trade-offs between not only the traditional travel time and cost variables but also the reliability of travel time. In essence, respondents were given choices

between general purpose lanes which were free, slow and less reliable, and managed lanes which were tolled, faster and more reliable.

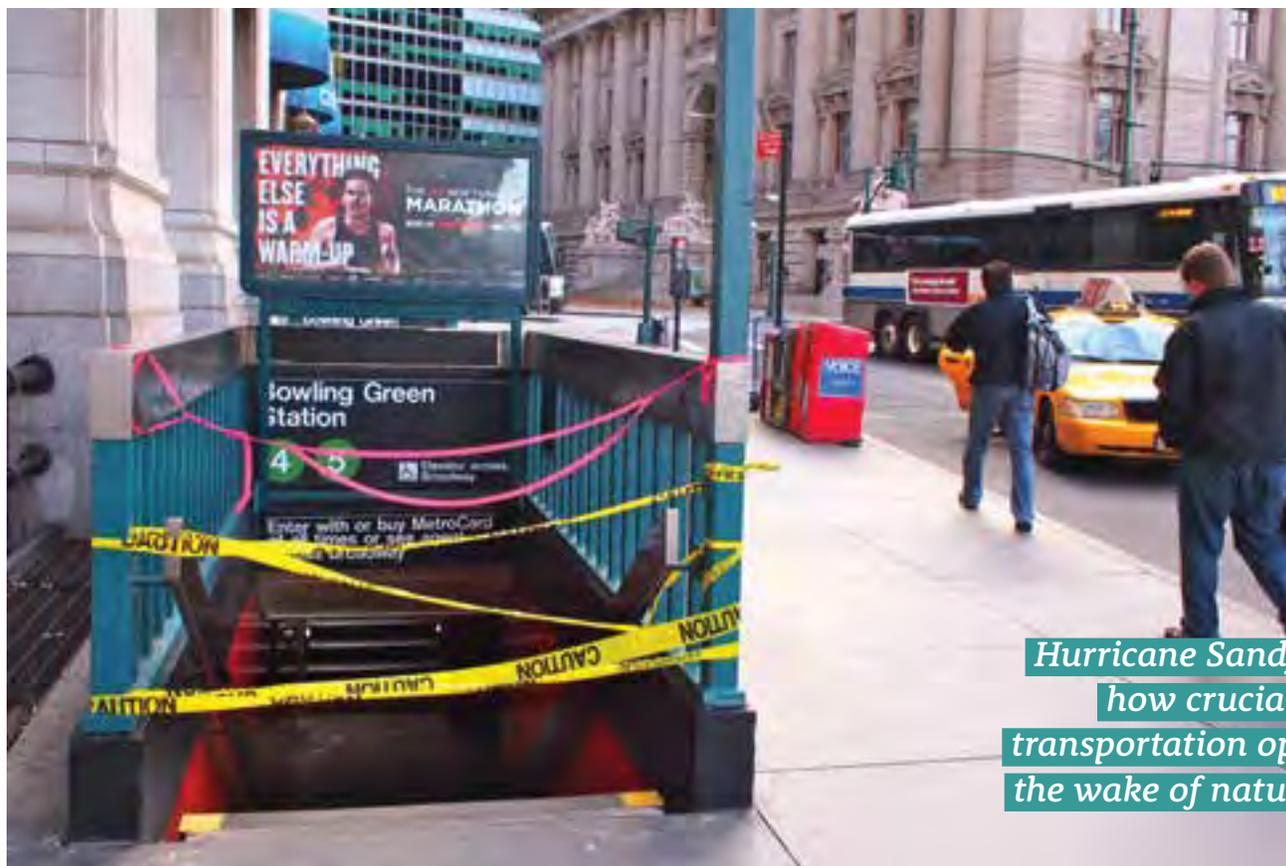
We analyzed the survey data to estimate parameters for both value of time (VOT) and value of travel time reliability (VOR). These were then used in our traffic forecasting model to estimate the proportion of travelers who will pay to use the managed lanes. The VOT was used to value the travel times of each option, while the VOR was used to value the "extraordinary delay" of the general purpose lanes, presented in the stated preference survey as the amount of additional delay that would occur 20% of the time. Our forecasting model therefore included estimates of the "extraordinary delay", and the travelers' response to it, based on the variability of current corridor travel times which we identified from new commercial sources of travel time information.

This approach has improved the accuracy of our traffic forecasting model to account for both average and exceptional levels of delay associated with rejecting the managed lanes in favor of the non-tolled option.



**To find out more contact:**

Lucile Kellis  
e lucile.kellis@sdgworld.net  
Dave Cuneo  
e david.cuneo@sdgworld.net



*Hurricane Sandy illustrated how crucial alternative transportation options are in the wake of natural disasters*

## The importance of resilience

**In the wake of natural disasters such as Hurricanes Sandy, Irene and Katrina, there is an increased focus on transportation system reliability during, and following, these devastating events.**

By Mario Scott & Pierre Vilain

This resiliency is increasingly considered when assessing transportation projects. Resilience projects can range from protecting existing transportation infrastructure to providing for rapid deployment of temporary transportation options in response to service disruptions. Hurricane Sandy illustrated how crucial such services can be: following the hurricane, temporary transportation services (notably passenger ferries) were deployed to compensate for the massive disruption of New York's subway system.

In response to the widespread damage caused by the storm, the Federal Transit Administration (FTA) is providing \$3 billion of funding for capital investments that increase transit system resiliency in the

face of natural disasters. The FTA's strategy is to allocate resources to projects that cost-effectively reduce the risk of damage from natural disasters. The benefits attributed to increased resiliency include reduced risk of infrastructure damage costs as well as reduced social costs such as travel disruptions. In addition, the FTA recognizes that resilience investments may also generate benefits, such as travel time improvements, even in non-disrupted situations.

Steer Davies Gleave was asked to provide technical support to the New York City Department of Transportation in measuring the costs and benefits of a project proposed to the FTA for funding. The project involved purchasing three new vessels for the Staten Island Ferry and improving a number of ferry landings. A major benefit of the project is the system redundancy that it provides: Should a future storm damage the subway tunnels under the East River, these vessels (with a capacity of 4,500 passengers) could be deployed to carry passengers across the river. Our analysis showed that the social

benefits of this redundancy in the event of a major disruption were over \$100 million.

The assignment illustrates two important trends: First, awareness of the potential impacts of future storm events is increasingly prevalent. Second, transportation projects' contribution to system resiliency is becoming an important aspect of how they are evaluated. This extends beyond investments that are directly tied to hazard mitigation, such as reinforcing storm walls, to those that provide redundancy in the event of a major disruption; this broader perspective could lead to a considerable change in transportation planning more generally.



**To find out more contact:**

Mario Scott

e [mario.scott@sdgworld.net](mailto:mario.scott@sdgworld.net)

Pierre Vilain

e [pierre.vilain@sdgworld.net](mailto:pierre.vilain@sdgworld.net)

## Walking: the forgotten mode



**Q. Which form of transportation is the oldest, is completely sustainable, and is something that many of us take for granted? A. Walking.**

By Justine Clift & Jonny Rotheram

In transportation planning initiatives, walking is rarely the main focus or most important attribute of a project. But walking should never simply be overlooked in favor of other modes – it is often central to the success of other modes and as North America continues to invest heavily in public transit, its importance is as high now as it's ever been.

In 2014, \$80 billion will be invested in new public transit in North America, adding 97 services amounting to 737 miles of heavy and light rail, streetcar, commuter rail and bus rapid transit. With service enhancements pending for almost every major metropolitan area, there is a real need to understand how people will access their improved network.

Given that most transit trips begin with walking, either to a bus stop for a local feeder route, or all the way to a station, it makes sense to consider improving conditions for pedestrians to get better value out of these significant investments in public transit.

Globally, many cities are using transit infrastructure investment as a catalyst for wider pedestrian improvements. Mexico City and Moscow are among the cities we have worked with recently to identify improvements to enable walking within transit rider catchment areas (a 15-20 minute walk from the station). Key principles for designing walkable networks include:

**Connectivity** – Major roads can sever neighborhoods and are a significant impediment to walking. Regular pedestrian activated crossings with refuge islands can break up the crossing distances and can alleviate some of the effects of severance. For neighborhoods, it can be useful to configure pedestrian cut-throughs to shorten trip distances and widen the catchment area of a station.

**Safety** – Widening sidewalks and narrowing vehicle travel lanes can be used to slow vehicle speeds and provide a buffer from traffic. Ensuring that adequate lighting is provided along the route improves security, increasing the willingness of pedestrians to travel when it is dark.

**Wayfinding** – A clear hierarchy of destinations helps direct people to places. Decluttering sidewalks by removing superfluous street furniture and signage will provide a clear path of travel and increase pedestrian comfort.

Though extensive street changes can seem overwhelming, our plan for Moscow (described in more detail on page 19) uses a phased approach, beginning with basic improvements that have an immediate impact on the pedestrian experience. Over time, the noise of engines will be replaced by the stomping of feet to the tune of sustainable travel change.



**To find out more contact:**

Justine Clift

e [justine.clift@sdgworld.net](mailto:justine.clift@sdgworld.net)

Jonny Rotheram

e [jonny.rotheram@sdgworld.net](mailto:jonny.rotheram@sdgworld.net)

# The relationship between VMT and GDP



**In the United States, vehicle miles traveled (VMT) rose at a similar rate to gross domestic product (GDP) during the seven decades after the Great Depression. With the exception of a decline in both GDP and VMT in 2007-2008, VMT began to grow at a slower pace than GDP; but why?**

By Lauren Schunk

Since 2003, VMT declined slightly and then fell flat as GDP continued to rise. While the definitive cause of the recent decoupling remains unknown, a look at the complex factors shaping the relationship between VMT and GDP points to several explanations.

Professionals and academics have long explored the causal link between GDP and VMT without consensus, asserting four conflicting conclusions: VMT influences GDP, GDP influences VMT, GDP and VMT influence each other (bidirectional causality), and neither VMT nor GDP affect one another. While methodological differences contribute to the disparity in results, a closer look at context may also explain the changing relationship. When highway construction and growth in car ownership peaked in the 1950s, a strong bidirectional link between VMT and GDP was observed. In contrast, analyses examining more recent years, when highway construction subsided and car ownership reached saturation, reveal a weaker correlation between the two variables.

Land use patterns have also been strongly linked to declining VMT which offers insight

into the weakening tie between GDP and VMT. Land use policies increasingly include measures promoting density, such as financial incentives for infill development, urban growth boundaries, and goals within TDM strategies. While density encourages economic growth (and even supports it due to agglomeration benefits), it lowers VMT since businesses and residences are located within close proximity. These recent policy objectives may therefore explain how GDP has recently increased at a higher rate than VMT.

Behavioral change of the millennials also offers a plausible explanation for the decline of growth in VMT. The current generation of young professionals exhibits a strong desire for automobile-independent lifestyles in urban areas; driving licenses for teens and young adults, once considered a ticket to freedom,

are at their lowest numbers since the 1960s. This preferential shift essentially reverses the trend toward an auto-centric, suburban lifestyle that dominated the behavior of baby boomers in the post-World War II era.

Historical context, land use, and preference shifts provide a snapshot of the many possibilities for the slower growth rate in VMT (compared to previous years) in spite of a growing economy. Understanding how these factors affect the economy and travel behavior can provide guidance for transportation professionals in public and private agencies, as they influence the outcome of TDM, managed lanes, and rail projects.

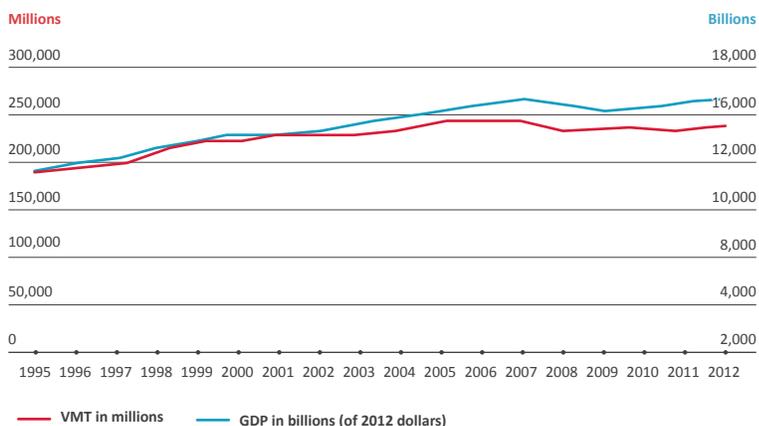


#### To find out more contact:

Lauren Schunk

e [lauren.schunk@sdgworld.net](mailto:lauren.schunk@sdgworld.net)

#### VMT versus GDP



Since 2003, VMT declined slightly and then fell flat as GDP continued to rise



## *Building a plan...or just planning to build?*

**Many city and regional planning exercises begin with a big map on the table, a pack of marker pens in hand, and a predetermined conclusion that new infrastructure will be needed.**

By Ian Druce

It's not surprising that people instinctively jump to a mapping exercise: building new roads, bridges, tunnels, subways or light rail transit is an exciting prospect that can help improve mobility and reduce congestion and crowding. However, if we jump straight to identifying infrastructure as the "answer", we may be missing a major opportunity to deliver benefits more quickly and affordably.

On a number of planning studies undertaken by Steer Davies Gleave over the past decade, we have worked with our clients to think not only about whether big-ticket infrastructure might be needed, but also about how to get better value out of what is already there, typically through changes in policies or operations, to deliver many of the same benefits.

One example is where a system is facing peak period congestion, and pricing could be used to change behavior enough to spread some of the demand to the shoulder periods when spare capacity might be available. This

could be done either through increasing prices at the "peak of the peak" or, possibly less controversially, offering deeper discounts for travel at non-peak times. This has its costs, but they may be much lower than building whole new transit lines to increase capacity over a short distance for a short period.

Another example might be where levels of service have been improved to boost ridership but passenger numbers haven't risen as expected. The issue may not be the level of service in isolation, but how it is packaged and integrated with other parts of the journey. In order to build an attractive system, all components need to complement each other, and we work with all our clients to plan, design and deliver fully integrated network solutions. This means thinking of every component of a transit trip, from finding information on routes, schedules, connections and fares, travel to and from stops, the waiting facilities and environment, means and ease of payment, safety, security and comfort (is a seat available) of the trip itself, and accurate signage and information throughout the journey.



**To find out more contact:**  
Ian Druce  
e [ian.druce@sdgworld.net](mailto:ian.druce@sdgworld.net)

### News in brief

#### Ridership forecasting for Amtrak

Steer Davies Gleave has recently been selected by Amtrak's Market Research & Analysis Department to provide a full range of ridership and ticket revenue forecasting and analytic/modeling support for all of Amtrak's services across the United States under a blanket on-call purchase agreement for three initial years with two additional optional years. Steer Davies Gleave will be an integral part of Amtrak's Market Research & Analysis team in resolving complex ridership and ticket revenue forecasting issues. Under this contract, Steer Davies Gleave will:

- Use Amtrak's existing models (with appropriate modifications as needed) to provide ridership and revenue forecasts for a full range of potential scenarios;
- Solve technical problems dealing with survey approach, execution and analysis;
- Perform studies using sophisticated sampling, analytic/modeling, and multivariate analytical techniques such as conjoint analysis, regression analysis, discriminant analysis, segmentation, and cluster analysis; and
- Refresh the existing and develop new forecasting demand analytics/models on an as needed basis.



# Building success with TMAs

In October 2013, Steer Davies Gleave assumed management of the Glendale Transportation Management Association (TMA), in Glendale, a city in Los Angeles County, California.

By Erika Kampe

While TMAs have developed throughout the United States as important localized resources for mitigating congestion and providing options to commuters, these public-private partnerships have played an especially important role in the LA area over the past couple of decades. Our experience developing successful TDM programs throughout North America and Europe make it a great fit for this type of implementation work.

The Glendale TMA, founded in 1989, was one of the first in the region – a response to the state’s recently introduced air quality regulations and infamous traffic congestion. Under the leadership of now-retired Director Brooke Geer Persón and a set of influential Board Members from companies such as Disney Imagineering, Dreamworks Studios and Nestlé, the TMA was successful in responding to the new regulations imposed on employers. They established the organization’s role as a centralized resource for commuter information and assistance, promoting transit, ridesharing, biking, walking and telework. The TMA has undoubtedly achieved some great results, but there’s still more that could be done.

Over the past decade, we have observed some general best practices from the most successful TMAs:

- **Gain support from the business community** – The local Chamber of Commerce and other business leaders must understand the TMA’s value and be willing to promote its services.
- **Impact policy** – Local policymakers are often the ones determining how safe, accessible and convenient sustainable modes such as walking, biking and transit will be.
- **Stay relevant** – Messaging should speak to the interests of the target audience, in a format they will use.



'Go Glendale' website, designed and implemented by SDG's Design for Movement team

Our first task after taking over the TMA was to conduct a strategic planning session with the TMA’s Board of Directors. We knew it would be important to maintain and strengthen relationships with City and business leadership. We also wanted to assess the ever-changing needs of the TMA’s target audience: employees in the professional and creative sectors. We identified the need to develop a strong online presence and cohesive brand, and our talented designers responded with an updated identity: Go Glendale. The organization launched this new brand in April, including the website [goglendale.org](http://goglendale.org).

With a fresh look and focused priorities, we will propel Go Glendale to build on its legacy as one of the first TMAs in the region with a mission to reduce traffic congestion, improve air quality, accessibility, mobility, and quality of life.

Check out the new brand for the Glendale TMA: [www.goglendale.org](http://www.goglendale.org)



**To find out more contact:**

Erika Kampe

e [erika.kampe@sdgworld.net](mailto:erika.kampe@sdgworld.net)

“The Glendale TMA, founded in 1989, was one of the first in the region – a response to the state’s recently introduced air quality regulations and infamous traffic congestion”



'Go Glendale' marketing collateral designed by SDG's Design for Movement team



“Organizations appear to be looking for new ways to gain customer loyalty, enabling them to increase revenues either to help improve cost recovery or to aid and fund service expansion”

## The voice of the Canadian transit industry

In early 2014, we ran our first annual “Voice of Public Transportation Survey” to give Canadian transit professionals an opportunity to share their insights and opinions on the key issues and challenges facing the industry.

We have now completed our analysis of the results, and share in this edition of the Review some of the more interesting findings. Those who responded to the survey will be provided with a full analysis – so be sure to participate in next years’ survey!

The survey focused on three main areas:

1. The role of respondents and/or their agency
2. The main challenges faced by transportation agencies in the next three years
3. Individual respondents’ views of the main issues they will face in their role in the coming years, particularly related to specific projects that are being taken forward



**To find out more contact:**  
Ian Sproul  
e [ian.sproul@sdgworld.net](mailto:ian.sproul@sdgworld.net)

### Key survey findings

The main findings of the survey can be grouped into two themes: network operations, and system planning and delivery.

**Network Operations:** the main issues were seen to be ongoing operations, State of Good Repair (SGR), and service expansion. Many associated comments focused on the challenges of delivering efficient transportation to existing but inefficient land use and development. Comments also related to maintaining or improving revenue recovery. Organizations appear to be looking for new ways to gain customer loyalty, enabling them to increase revenues either to help improve cost recovery or to aid and fund service expansion.

While many respondents worked for agencies with some responsibility for managing roads and traffic, congestion was generally not seen as a concern. On the contrary, many respondents saw congestion as a key component of their toolkit for building support for investment in transit (and active transportation, or walking and cycling) networks and promoting long term mode shift.

**System Planning and Delivery:** the main issues and challenges identified were the planning of high capacity transit corridors, and the need for ongoing engagement of stakeholders and the public throughout the process. Respondents saw this as particularly important to gain support and aid in the delivery and funding

of final projects. Even in smaller cities across the country, most respondents indicated that their priority transit projects were focusing on reallocating road space to transit. This is consistent with the relatively low levels of concern with local congestion issues.

Active transportation was seen as a major area for growth and investment, not least because it can deliver mode shift at low cost or even no cost. However, while many respondents recognized the role and need for investment in active transportation, few felt that their agency was dedicating sufficient resources to it, particularly compared to investment in transit and roads planning.

A consistent issue, identified across all areas of transportation operation, development and delivery, was the need to be able to support “evidence-based decision-making” with clear information on costs, funding, financing and hence the ability to demonstrate value-for-money. Respondents saw international best practice, and “views from elsewhere”, as useful means of informing this debate, particularly where expenditure on transportation is a politically sensitive issue.

The inaugural 2014 survey was a great success. For 2015, we plan not only to repeat the survey but also to expand it to include the USA. We hope that you found the summary interesting and will join the conversation next year.

## News in brief

### PPACG (Pikes Peak Area Council of Governments) Regional Active Modes Plan

We have been working in the Pikes Peak region for almost one year now, developing the region's Active Modes Plan. After undertaking a significant outreach and data collection exercise (more information can be found at [www.walkbikeconnect.org](http://www.walkbikeconnect.org)) we now have the bones of the plan in place. Our team is working to further define the Regional Active Modes Network through prioritization and the development of an implementation plan.

### Personalized Travel Planning in California

Personalized Travel Planning is a Transportation Demand Management (TDM) technique used extensively in the UK (and elsewhere) which we are testing in Encinitas, California. Early indications are that our Travel Advisors, and the help and information they provide, are being well-received. Results from the trial will be available in a few weeks and will be posted in our internet site.

If you're interested in being notified when the results are available, or would like to know more about Personalized Travel Planning, contact us at [marketing@sdgworld.com](mailto:marketing@sdgworld.com)

### Good news for Ann Arbor's commuters

In 2012, Steer Davies Gleave completed the Transit Master Plan for the city of Ann Arbor and its wider county in Michigan. This included the development of an implementation plan for an expanded service and also a funding structure for the plan. Early this May, following a referendum, approval was given for the expansion of transit services in Ann Arbor, Ypsilanti and Ypsilanti Township in Michigan, USA. The yes vote means that the transit authority can raise \$4.4m of new revenue per year from the extra millage collected in Ann Arbor and an expanded urban area. This extra income will allow some 40% increase in the level of transit services.



## An outsider's perspective

**Steer Davies Gleave believes in strengthening its international expertise by enabling opportunities for its staff to work across the globe. Two recent secondments have seen Rebecca Powell (R) complete two years in our Toronto office from London, and Maria Curro (M) undertake a move to the UK from Vancouver. With two different perspectives and experiences, we asked them what their views were on getting around in a new city, and in doing so discovered what they missed from home.**

### At what point did local transportation feature in your relocation?

**UK R:** When I set foot in Toronto the first question I had was "where am I going to live?" The Greater Toronto Area is over seven thousand square kilometers so the possibilities are huge, except I didn't have a car and neither did I want one. With fewer public transit options than London, opting not to have a car created a greater constraint than what I was used to.

**CA M:** Arriving in London for the first time, I was excited to be in one of the world's most fascinating and diverse cities. My 'to do' list was filled with the names of museums, galleries, parks and shows to attend so I found the easiest way to explore was to take advantage of London's transport system – the busy Underground and Overground system, National Rail and double-decker buses.

### What were your first impressions of transportation in your new city?

**UK R:** Toronto is rightfully proud of its subway system, and its streetcars add a sense of identity to the city streets. While getting around without a car is possible it often requires a bit more planning and time. When working on the Hurontario-Main Light Rail project in Mississauga, my commute would consist of 1.5 hours of walk-subway-carpool. Now and then I would forget that the subway operates on a cash-only basis, so this could often be longer!

**CA M:** Ready to explore London, I asked myself "How easy is it to travel using the Underground and bus system?" Buses, the Overground and Underground, and National Rail systems all connect well with one another, reducing the time needed to plan my trip. The Oyster card, which can be used on all modes, ensured that I did not have to purchase tickets or insert cash. However, the UK suffered a spate of stormy weather recently and I was surprised by how this affected the Capital's transport network – particularly the mass train cancellations which caused a lot of disruption. I've since learned from colleagues here that the weather, particularly snow, can have a major impact on the network.

### What stood out for you, as a transit customer?

**UK R:** For \$3 you can get anywhere in the city using the subway, streetcar and bus network, which is outstanding value. I can see an

“Limitations to cycling in London are evident, and well publicised, including the lack of cycle lanes, traffic and congestion, and attitudes of lorry drivers”



opportunity for improving connectivity through better wayfinding, which would help integrate pedestrians and transit transfers between the underground and surface. Currently the complex, sub-surface PATH system and six-lane intersections can make getting around by foot and transit seem more complicated than it actually is.

**🇨🇦 M:** The London Underground system is made up of 11 extensive lines and over 250 stations. At first glance, one can become overwhelmed by the sheer size of the Underground map. However, the famous roundel sign makes it easy to identify an Underground station, while station signage easily allows for the planning and mapping for one’s entire journey. Platform signage indicates the travel direction of the train and stations along the route, and station signage clearly demarcates how to access other modes of transport. I’m not sure how easy it would be for a non-English speaking tourist to navigate though.

**How have you found being a pedestrian in the city?**

**🇬🇧 R:** Despite the perception that people do not walk in North American cities, there is an increasing focus on the pedestrian environment in downtown Toronto that is being integrated into the evolving public realm. Steer Davies Gleave is currently developing a Wayfinding Strategy with the City of Toronto that will make

walking a real transportation choice for the residents and visitors of a growing downtown – at the moment it’s probably the least convenient mode to use to get around.

**🇨🇦 M:** The Legible London signage which is visible all over the city center provides guidance on how to travel to the nearest point of interest. With its consistent and easily identifiable signage, accurate distance between areas and integration with other modes, the Legible London signage has really helped me get around London by foot. SDG is currently undertaking a study, on behalf of Transport for London, to better understand how people use the Legible London signs.

**Did your travel behavior adapt and change over time?**

**🇬🇧 R:** Travel in Toronto reached a turning point for me when I bought a bicycle. The city lends itself to cycling in many ways as it’s relatively flat and rarely rains. Although it’s cold in winter, getting on my bike kept me a lot warmer than waiting for a streetcar (or two). While the cycling network is extensive it suffers many constraints – Mayor Rob Ford’s attempts to end his perceived “war on the car” for example.

**🇨🇦 M:** London has a vast cycling network which appears to be under continuous improvement. Barclays’ Cycle Hire has proven to be immensely popular, especially in Central London. While my experience using these “Boris” bikes is for leisure travel only, a number

of limitations to cycling in London are evident, and well publicised, including the lack of cycle lanes, traffic and congestion, and attitudes of lorry drivers.



**To find out more contact:**

Rebecca Powell  
**e** [rebecca.powell@sdgworld.net](mailto:rebecca.powell@sdgworld.net)  
 Maria Curro  
**e** [marria.curro@sdgworld.net](mailto:marria.curro@sdgworld.net)

“Toronto is rightfully proud of its subway system, and its streetcars add a sense of identity to the city streets”

# Direct transit ridership forecasting



**The regional travel demand model is the traditional tool for forecasting transit ridership. Future plans for the transit and highway networks and services are combined with economic, population and employment assumptions to forecast future travel patterns and transit ridership.**

By Mark Feldman

Particularly where transit use is low, these models are typically developed and calibrated with the aim of reproducing the current patterns of travel by private automobile. Each automobile trip diverted to transit is assigned to stations, typically those that result in the lowest end-to-end walk and travel time, and then total ridership is aggregated by station and transit line. The model may predict total transit ridership accurately, but provide only poor estimates of ridership from each station or on each route.

This approach may be satisfactory for estimating total ridership or, in bus-based systems, the total fleet size required to provide adequate capacity. However, a transit agency

may want to estimate ridership increases from the construction of a new station. A private developer may want to find the optimal mix of uses from its proposed transit-oriented development. A city may want to know how much traffic the local streets can absorb from a new transit station garage or parking lot. A Metropolitan Planning Organization may want to allocate land in such a way that maximizes transit share. All would like these estimates to be provided by a quick-response tool, rather than a detailed regional travel demand model which may take a long time to run and have high resource requirements.

One alternative to a regional travel demand model is a Direct Ridership Model (DRM), which uses statistical regression to relate observed transit ridership at individual stations to a series of independent variables. These variables can include population and jobs in the neighborhood, level of service provided by the transit services, level of competition with automobiles, amenities at the station such as parking and bike racks, characteristics of the built environment around the station, and anything else that is relevant and quantifiable. A regression equation is developed which

takes into account all the variables which are found to affect ridership significantly. The equation can then be used to predict future ridership at existing stations, or future ridership at future stations, as conditions change.

DRMs have been developed and used in areas such as Los Angeles, Salt Lake City, Boise, Charlotte, St. Louis and Washington, D.C. Their main advantages are quicker run times, simplicity, and sensitivity to meaningful policy variables such as station land use and accessibility. Their primary limitation is the lack of an explicit model of how transit competes with other modes on travel times, and hence how changes in the highway network will feed through to transit ridership. There will be projects where the regional travel model is still necessary to understand these effects. The choice of the most appropriate tool will depend on the scale of the transit investment being considered.



**To find out more contact:**

Mark Feldman

e [mark.feldman@sdgworld.net](mailto:mark.feldman@sdgworld.net)

# Randomized controlled trials



“A single bike rack is unlikely to cause huge uptake in cycling, however a series of bike racks are more likely to have an impact”

**As governments seek to incorporate more empirical evidence into their decision-making, many are conducting Randomized Controlled Trials (RCTs), the type of experiments used to approve medical treatments, to test the effectiveness of their programs. Transportation planners could also use RCTs to better model human behavior or evaluate design decisions, policies and programs.**

By Jonathan Leape

Randomized Controlled Trials (RCTs) are simple experiments where one randomly-selected group receives a treatment of some kind, and is then compared to another randomly-selected untreated group. Medical researchers have long used RCTs to test the effectiveness of treatments, but the technique is only recently becoming common in public policy.

For example, development economists are adopting RCTs as a tool to evaluate poverty alleviation policies before applying them at a large scale. In some cases, such trials have shown well-intended programs to be ineffective or even harmful; at a minimum, they have shown that human response to policies can be very sensitive to context.

The behavioral parameters in transportation forecasting models, such as the value of time and modal preferences, can also be context-specific. For this reason, transportation planners often observe actual travel behavior to estimate those parameters for a specific project. When the data required for robust revealed-preference studies are not available, planners rely on stated-preference surveys or studies from other cities, which may be less accurate. To test designs, policies or programs that can be implemented on a small scale

with relatively little investment, transportation planners can use RCTs to create data that reveal actual behavior in the local context.

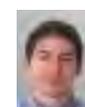
As one example from the passenger rail sector, planners could use RCTs to measure the ridership impact of specific amenities, such as on-board Wi-Fi. An agency could mail to a random group of residents a code to use Wi-Fi for free on commuter trains. If the group that received the code then rode the train more than a random group that did not receive a code, the agency might consider providing free Wi-Fi for all its passengers.

As another example, RCTs could be used to evaluate Transportation Demand Management (TDM) programs designed to discourage commuters from driving alone to work. TDM measures, such as subsidized transit passes, showers for cyclists and parking fees, can all be tested with RCTs, enabling transportation management associations to focus on providing the programs proven to work in their context.

In medical research, RCTs can raise serious ethical concerns, since experimental treatments may cause harmful side-effects and effective treatments are withheld from the control group, which could potentially benefit from them.

Similarly, RCTs could also cause unrest amongst participants when applied in public policy. Some trials could create unrealistic expectations amongst travelers which may cause complaints if, following the trial, a successful program fails to be rolled out. They may also be misleading if they are applied to programs which require a minimum degree of implementation or other complimentary policies to become effective. For example, a single bike rack is unlikely to cause a huge uptake in cycling. However, a series of bike racks connected by a network of new bike paths are more likely to have an impact. While it's important to consider these potential issues, they should not be overstated and nullify the benefits of the method.

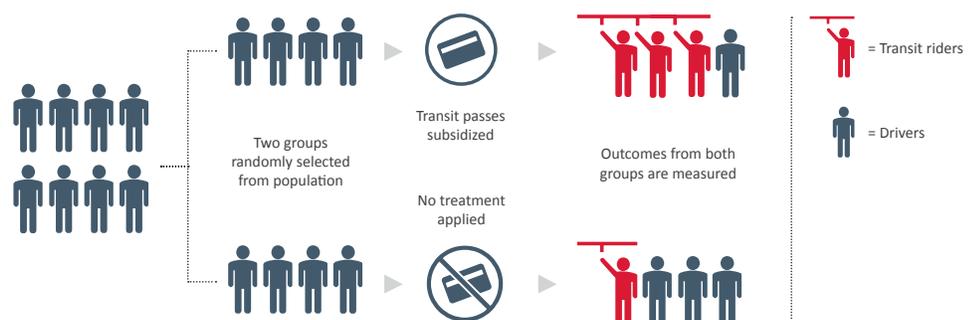
Transportation planners already utilize a variety of techniques to inform decision-making with empirical evidence. RCTs could be an additional tool for investigating how scalable transportation measures affect travel behavior in a particular context.



**To find out more contact:**

Jonathan Leape  
e jonathan.leape@sdgworld.net

**The basic design of a randomized control trial (RCT)**



# New GTFS standard brings open data to public transit

**Transit information is changing for the better in North America. One of the key drivers for this change is how transit agencies, keen to improve the way they engage with their customers, are providing good quality schedule data to web designers and app developers.**

By Craig Nelson

Google is one of the main players in this data revolution. Google worked closely with Trimet (Portland, Oregon) to develop a new standard for transit schedule data organization, known as GTFS, that any agency can use to provide trip planning, maps, printable schedules and other online interactive tools. Trimet's transit website set the standard for online information in North America, and others have now adopted the GTFS standard. The free GTFS Exchange website makes GTFS data for over 728 transit agencies worldwide available for download (have a look and see if your local agency is in there!). Of course, Google is keen to use this data as part of its aim to digitize as much public information as possible, so all of these agencies now have a readily available trip planning resource in the form of Google Maps.

“EMBARC sets new standards for transit information in North America”

We have recently partnered with the Central Oklahoma Transportation and Parking Authority (COTPA) – now known as EMBARK – to develop and implement strategies that will strengthen their agency as a reliable and easy-to-use transit option in the Central Oklahoma region. Our ongoing collaboration will add to Oklahoma City's renaissance and their rise as one of North America's most transformative cities. Open data, specifically GTFS, was the key to helping EMBARK develop customer-focused transit tools. We were immediately amazed at how easy GTFS was to use, and excited at the possibilities open data presents for all transit agencies and their customers. Using our experience of developing multimodal, user-focused websites, we helped COTPA to understand what was possible with GTFS and open source software, and subsequently designed and developed COTPA's new website and travel tools (see [embarkok.com](http://embarkok.com)). Google is currently processing COTPA's data for inclusion in their ever-popular Google Maps, so regional and even national trip planning will be possible for Oklahoma City residents and visitors.

EMBARC sets new standards for transit information in North America and builds on the ground-breaking work carried out by Trimet.

An easy-to-use, all-in-one schedule interface allows users to view bus routes quickly on an interactive custom Google Map, see route schedules, and get real-time information for all stops in Oklahoma City. A bus stop tool allows users to input their work or home address, and to see which bus routes serve their needs. Coming soon is a Google-powered multimodal trip planner, a first for Oklahoma City and something that is likely to change the way people make informed transportation decisions.

So, hats off to GTFS, and we're excited to see what we can do with it next.

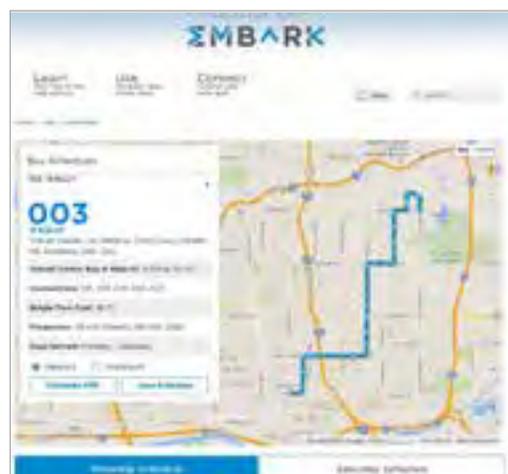
Embark can be visited at [www.embarkok.com](http://www.embarkok.com)



**To find out more contact:**

Craig Nelson

e [craig.nelson@sdgworld.net](mailto:craig.nelson@sdgworld.net)



Web pages from [embarkok.com](http://embarkok.com) showing bus schedules

## Step by step in Moscow

**In 2012 the Moscow City Government announced plans to double the size of the city territory, yet it is still prioritizing pedestrians by pursuing a major strategy to improve walkable routes throughout the city.**

By Richard Crappsley

Moscow is a city on the brink of significant change, with over \$60 billion of transport network improvements expected by 2020, including over 100 kilometers of new Metro lines. However, in keeping with its existing walking strategy, the Government has prioritized the creation of a high quality walking and cycling environment, exemplified by recent city center projects (see North American Review 11) including pedestrianizing Nikolskaya Street (designed by Steer Davies Gleave) and other nearby streets, a river cycle route and a bike rental scheme.

The Government also wants to improve walking and cycling in residential neighborhoods and districts up to 10 kilometers from the city center. To help achieve this, Steer Davies Gleave recently supported an international team, working for the Moscow City Government, responsible for integrated transport projects.



Architect's impression of the proposed enhancements to sidewalks

A pedestrian route improvement strategy will cover a 1.2 kilometer, or 15 minute walking time, catchment area around 35 of Moscow's 190 metro stations. Routes will be more pleasant, safe, and comfortable, encouraging more people to walk. With improvements on this scale a number of design challenges must be addressed if pedestrians are to benefit fully. In Moscow's case, we identified:

**Cars park everywhere in Moscow.** Moscow's streets were not originally laid out for high car ownership, and so people park on roads, curbs, and sidewalks with impunity. Part of our solution was full height curbs, and strategic positioning of street furniture and trees, to define and mark pedestrian spaces. Ultimately, however, stronger enforcement is also needed.

**Level changes present major barriers for all people.** We found steep ramps and a lack of dropped curbs on many routes, issues which could be overcome with properly designed standard details.

**Navigation within "superblocks" is difficult.** We found that this is due to unclear and undifferentiated internal routes. Clear and consistent wayfinding information would

aid pedestrians greatly, as would distinctive design elements, such as feature planting and special street furniture and surfacing, to strengthen the "sense of place".

**Pedestrian movement is hindered by poor sidewalks.** These are often too narrow, obstructed, poorly surfaced, or simply not there. Our work identified measures to enhance the continuity and consistency of routes.

**Station entrances lack visibility.** Consistent and distinctive public realm improvements would not only enhance visibility but also contribute to a stronger local civic identity. To address some of these challenges, we had to create individual design solutions for each route, with accompanying design guidance for wider application.

Delivery of these improvements is set to take place during 2014, in line with the City Government's ambitious investment program. We're looking forward to seeing the results.



**To find out more contact:**

Richard Crappsley

e [richard.crappsley@sdgworld.net](mailto:richard.crappsley@sdgworld.net)

# 10

## reasons to work with us

For more information visit:  
[www.na.steerdaviesgleave.com](http://www.na.steerdaviesgleave.com)

 Follow us: @sdgworld

**Global** Our clients say they value our distinctive global experience. With offices on three continents, we are able to learn from our global best practice.

**Local** Local teams in all our markets bring our global expertise to your neighbourhood.

**Innovative** Pioneer in the application of stated preference in transport research. Pioneer of techniques to measure economic impacts of transport investment. Pioneer in the use of mobile phone data in transport modelling. We always look to the future.

**Trusted** We value our long-running relationships with clients. Our clients keep coming back to us; it tells us that we are doing the right thing.

**Strategic** Big businesses, public sector, new technologies and changing markets. We believe in long-term solutions. We help our clients plan for the future.

**Quality** With the industry's most experienced transport consultants, strategic advice, expert opinion and technical excellence are the foundations of our company.

**The bigger picture** Our services go beyond transport to meet the wider needs of our economy, our environment and society.

**Building partnerships** We believe in relationships. Building a culture of shared knowledge benefits us all.

**Independent** Being an employee-owned business means we offer our clients unbiased and objective advice. We have no corporate affiliations and no obligations to downstream construction resources.

**Personal** We love being in the transport business. Talk to us.

## Our offices

### Bogotá, Colombia

t +57 1 322 1470  
e colombiainfo@sdgworld.net

### Bologna, Italy

t +39 051 656 9381  
e italyinfo@sdgworld.net

### Boston, USA

t +1 (617) 391 2300  
e usainfo@sdgworld.net

### Denver, USA

t +1 (303) 416 7226  
e usainfo@sdgworld.net

### Leeds, UK

t +44 (0)113 389 6400  
e leedsinfo@sdgworld.net

### London, UK

t +44 (0)20 7910 5000  
e londoninfo@sdgworld.net

### Madrid, Spain

t +34 91 541 8696  
e spaininfo@sdgworld.net

### Mexico City, Mexico

t +52 (55) 5615 0041  
e mexicoinfo@sdgworld.net

### Rome, Italy

t +39 06 4201 6169  
e italyinfo@sdgworld.net

### San Juan, Puerto Rico

t +1 (787) 721 2002  
e puertoricoinfo@sdgworld.net

### Santiago, Chile

t +56 (2) 2757 2600  
e chileinfo@sdgworld.net

### São Paulo, Brazil

t +55 (11) 3151 3630  
e brazilinfo@sdgworld.net

### Toronto, Canada

t +1 (647) 260 4861  
e canadainfo@sdgworld.net

### Vancouver, Canada

t +1 (604) 629 2610  
e canadainfo@sdgworld.net