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Bus Fleets in Texas

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Bridges

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Data Layers to Provide the
Best "Bang for the Buck"

TEXAS TRANSPORTATION

Researcher

VOL. 50 | NO. 4 | 2014



What **Texans**
Think About Their
Transportation System

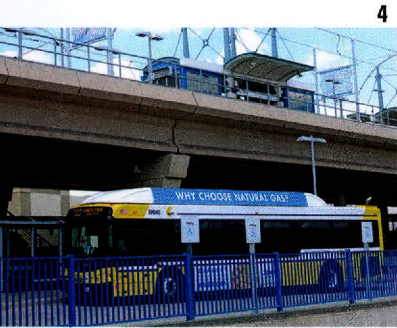
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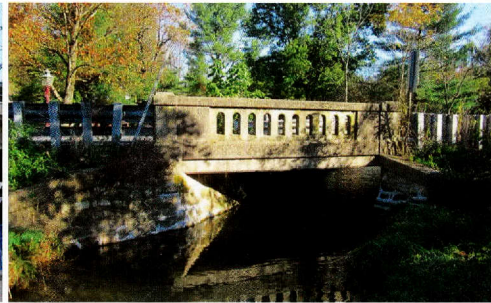
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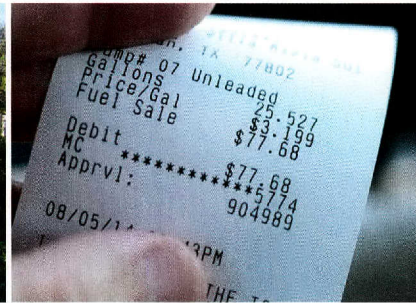
ON THE COVER: TTI's Transportation Policy Research Center recently polled more than 5,000 Texans statewide across 12 regions to determine their opinions about our state's transportation system, including how it's funded and their likelihood to embrace various travel modes.



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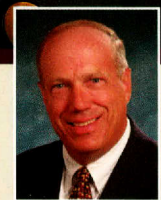
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by Dennis Christiansen
Agency Director

TTI Helps Texas Stay on Course for the Future

As Texas lawmakers prepare for the 84th Texas Legislative Session, one of the topics on their agenda is the Texas transportation system. How to maintain and enhance all modes of transportation in the state to benefit residents, business owners and travelers has been discussed in recent sessions.

Given innovations in technology and a growing population, what should the state's network look like 20 or 30 years from now? How can we pay for maintaining the current infrastructure we have while adding needed improvements to meet future demand? How can Texas facilitate international trade for the country as a whole?

One thing is clear: we'll need new solutions to answer these questions. The old way of doing things — simply building our way out of an ever-increasing demand on our infrastructure — won't work anymore. In 2013, TTI launched the Transportation Policy Research Center (PRC), under the direction and support of the Texas Legislature, to conduct research and analyses to help guide lawmakers in finding those new solutions. As a result, PRC is looking ahead in the areas of finance, freight, congestion, technology, public engagement and transportation data.

This issue of the *Texas Transportation Researcher* profiles several center projects aimed at arming decision-makers with research for use in shaping transportation policy that will affect all Texans for decades to come. Notably, PRC recently conducted a statewide poll to gauge the public's understanding of the state's transportation system and preferences for future alternatives. Legislators can use the survey results to fashion more effective policy to better meet the needs of constituents. As you'll read in these pages, PRC is also developing new tools on merging multiple data sets and exploring innovative travel demand management programs.

A number of other Institute research initiatives are improving transportation in Texas and beyond. On the international front, we're helping to retrofit bridges to bring them up to current safety standards. Our Transit Mobility Program is

working with agencies in Texas to help them better understand the challenges and benefits of converting their bus fleets to more environmentally friendly fuels, like compressed natural gas. And TTI's award-winning Teens in the Driver Seat program has just received a \$350,000 grant from State Farm to expand the reach of its peer-to-peer young driver safety program to 100 more high schools around the United States.

TTI research initiatives like those profiled in these pages are helping Texans at all levels, from the young drivers behind the wheel for the first time to elected officials working diligently to shape our state's future. We're like the navigator in the passenger seat on a long trip. Having another pair of eyes can help the driver stay on course and keep everyone in the car safe. And that's what TTI research does for the state of Texas. ■

We know that the price and supply of natural gas are relatively stable compared to gasoline and diesel, and the vehicle technology is no longer considered a gamble.



Compressed Natural Gas Bus Fleets in Texas: To Convert or Not to Convert — That Is the Question . . .

In 2009, Dallas Area Rapid Transit (DART) began a fuel-transition program to replace its transit bus fleet with compressed natural gas (CNG)-fueled buses and to construct the necessary refueling infrastructure by 2012.

Even though DART faced considerable up-front capital costs to build a fueling station and upgrade the existing gas pipeline, the low cost of the natural gas made the conversion cost effective. Today, DART has two on-site CNG refueling stations and has converted 81 percent of its fleet to CNG. Partially in response to this — and the fact that Texas has one of the most abundant supplies of natural gas in the world — Houston METRO and Capital Metro in Austin asked the Texas A&M Transportation Institute (TTI) to take a look at the value and feasibility of converting their bus fleets to CNG.

TTI Associate Research Scientist John Overman and Assistant Research Scientist Lauren Cochran have worked with transit agencies to examine the state of the practice in alternative fuels for transit, perform life-cycle cost (LCC) analyses comparing fleet purchase scenarios, and assess the financial risks involved in converting to a CNG fleet.

“Our sponsors are most interested in knowing when it would be economically beneficial to convert to CNG, and how specifically to go about that process,” says Overman, who’s been working with Texas transit agencies for 20 years.

Since modern CNG vehicles are similar to diesel in operations, emissions and reliability, determining whether conversion is worth the initial investment can be a challenge. According to Cochran, a national expert in alternative fuels for transit vehicles, “We know that the price and supply of natural gas are relatively stable compared to gasoline and diesel, and the vehicle technology is no longer considered a gamble. This is attractive to transit agencies who manage very large fuel budgets.”

Researchers are able to adjust 28 variables in the LCC model to account for changes in fuel price, fuel taxes and incentives to produce current financial assessments.

“The return on investment is largely dependent on fleet size. The economy of scale has to be there for CNG to be a competitive fuel over diesel,” says Cochran. For the 100-bus-fleet, 12-year LCC model output, run with and without a tax credit for CNG, the savings ranged from \$8 to \$23 million, even factoring in the cost of building a \$1 million refueling station — something that may not be required for some agencies. “For a smaller fleet, converting to CNG may not be the most economical option,” Cochran adds. ■



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TTI Transit Research Highlighted at APTA Annual Meeting

An estimated 15,000 public transit-agency professionals converged in Houston's Hilton Americas and George R. Brown Convention Center Oct. 12-15 for the American Public Transportation Association's (APTA's) 2014 Annual Meeting, which is billed as the industry's premier event.

With growing ridership, funding continues to be a leading issue for transit agencies around the country. According to a recently released report from APTA, "More than 2.7 billion trips were taken on U.S. public transportation in the second quarter of 2014, a 1.1 percent increase over the same quarter last year, representing an increase of 30 million more trips."

"The industry is encouraged by an increase in transit ridership over the past few years, but public transit agencies continue to be strapped for funds during a time when federal policy remains uncertain," says Linda Cherrington, manager of the Texas A&M Transportation Institute's (TTI's) Transit Mobility Program and head of TTI's Transportation Planning Division. TTI researchers were active in the APTA Annual Meeting.

On Oct. 11, TTI researchers conducted a pre-conference workshop, the Hot Topics in Transit Workshop, highlighting many of the important issues facing transit systems. Topics covered included research and development, technology and performance, safety, sustainability, and passenger mobility. In addition, TTI researchers gave presentations in breakout sessions and committee meetings.

"Technology will continue to play an important role in enhancing transit operations, improving safety and

providing passengers with multiple methods to obtain real-time information," TTI Assistant Research Scientist Lauren Cochran says. She's heading up the transit portion of an automated and connected vehicle technologies test bed at the Texas A&M University Riverside Campus.

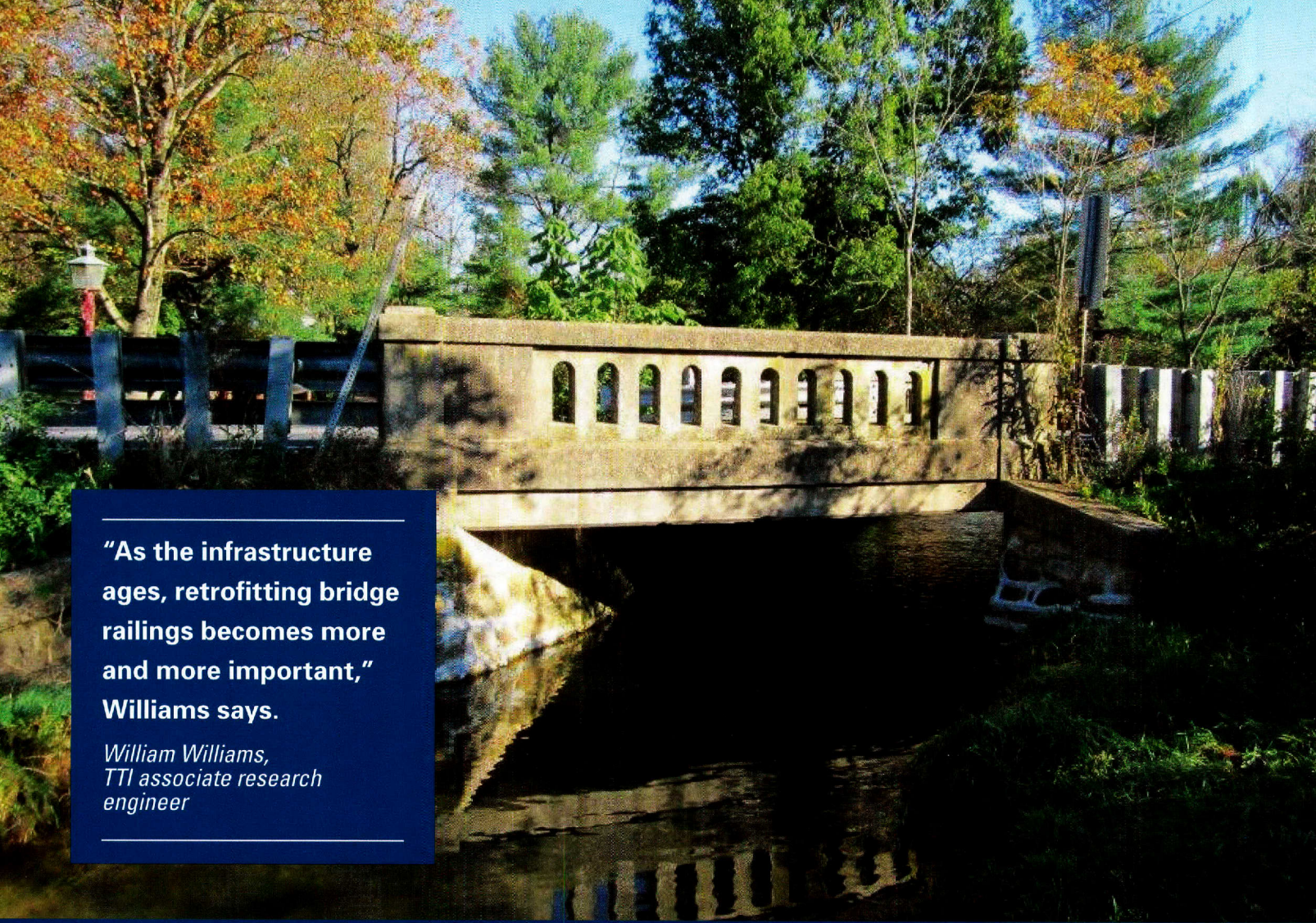
"I found the range of topics on innovations, best practices and research results very informative and potentially useful for us in the Twin Cities," says Lucy Galbraith, director of transit-oriented development at the Metropolitan Council of the Twin Cities. "I think everyone left with new information and lessons from other places they could use in making transit services better and safer."

"The Hot Topics in Transit Workshop conducted by TTI provided transit agency personnel with updates on recent research projects," notes Michael Melaniphy, APTA president and chief executive officer. "Learning about innovative approaches to key issues and sharing ideas on further research benefit the transit industry."

In addition to its meeting presentations and pre-conference workshop, TTI manned a booth at the APTA Expo held at the George R. Brown Convention Center. The expo is the world's largest public transportation exhibition, with more than 750 exhibitors. ■



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“As the infrastructure ages, retrofitting bridge railings becomes more and more important,” Williams says.

*William Williams,
TTI associate research
engineer*

Many of the bridge railings in the United States were built decades ago. Great strides have been made in the area of roadside safety. The Texas A&M Transportation Institute is working across the country and internationally, helping states and other countries retrofit their older railings with modern, crashworthy designs.

TTI Becoming Known for Expertise in Retrofitting Bridges

Transportation research often focuses on finding safer and more efficient ways of doing things. A case in point is older bridges. Some features may need to be modernized to make older bridges safer and more reliable.

“The nation’s infrastructure is wearing out,” says William Williams, an associate research engineer at the Texas A&M Transportation Institute (TTI). “Many bridges were built over 50 years ago. Although they are structurally fine, the railing designs are outdated, and that makes them less safe than they could be.”

Williams is becoming known across the country as the “Retrofit Man.” In fact, when the phone rings in his office, there’s a good chance the person on the other end wants to talk about replacing worn-out bridge railings with

something safer and a lot more modern. Since Williams is a structural engineer with a passion for design work, he doesn’t mind taking those calls.

“As the infrastructure ages, retrofitting bridge railings becomes more and more important,” Williams says. That’s not to say he only does bridge railings. In fact, in October, he received national attention for designing a security barrier for the U.S. State Department. Highlighted in the last issue of *the Researcher*, a video of a truck smashing into the barrier went viral. The barrier crash test was successful.

His latest test involves crashing a car into a railing that's being considered for installation on Louisiana's Lake Pontchartrain Causeway. At 24 miles, it's the longest bridge in the world.

"Built in the 1950s, the bridge railings on the causeway are too low and don't meet current safety requirements. It's not unusual for cars and pickups to hit the railings, go over them, and wind up in Lake Pontchartrain. It's especially dangerous when fog sets in, which happens a lot," he says.

Williams was awarded the massive project after he completed another Louisiana retrofitting job — on Route 11 — that impressed sponsors. "Word of mouth is good for business," he says. "The transportation community is large but close-knit."

William Williams is becoming known across the country as the "Retrofit Man."

Williams' name comes up a lot in places like Pennsylvania, where a thousand rural, small and outdated concrete bridge barriers are attached above narrow creeks that weave across the state. Some of the rails were put in place when folks were driving around in Model Ts. Williams designed several options the state is considering.

He has refitted bridges in Florida, Washington, Virginia, Minnesota and, so far, one other country: Argentina. That bridge, located in downtown Buenos Aires, provides elevated roadway access to the city. The need for the refit originated from numerous fatal crashes that occurred on the bridge, including a bus crash in 2007, which resulted in 12 fatalities. On average, seven fatal crashes occur on the elevated bridge each year.

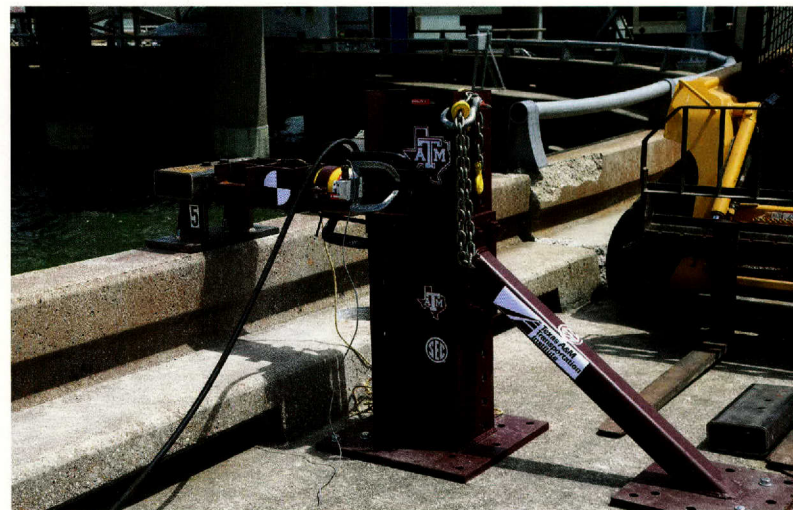
After reviewing railing designs, project engineers selected a concrete single-slope barrier that meets the requirements of National Cooperative Highway Research Program Report 350 TL-5. Williams ran a full-scale TL-5 test in Buenos Aires, and the barrier is now being installed. He's currently working on another Argentinian project and evaluating several others.

"Most foreign countries have the same problem we do: aging infrastructure and dangerous bridge railings," he says. "Helping them address roadside safety is personally rewarding."

Even so, Williams is busy here at home. "Because of the condition of bridge railings across the country, we are poised to do a lot more research," he says. "I think sponsors know that we can take what they have, update it, and help them get a crashworthy railing that's modern and meets the current safety standards." ■



This Pennsylvania bridge rail is similar to thousands of others across the state. TTI has designed several bridge rail retrofit options the state is considering for implementation.



Researchers conduct static strength tests on one of two railing designs being considered for Louisiana's Lake Pontchartrain Causeway bridge.



A full-scale crash test was performed at TTI Dec. 12 on one of the retrofit designs for Lake Pontchartrain.



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WHAT DO TEXANS REALLY THINK?

Most Texans Support More Funding for Transportation, *New Poll Shows*

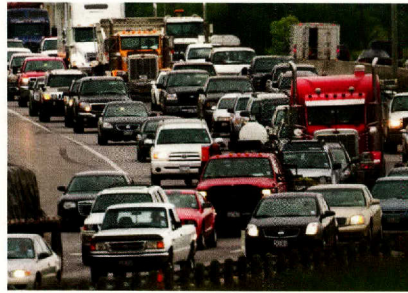
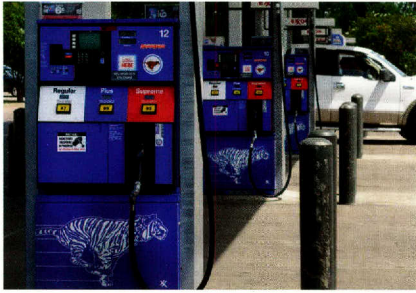
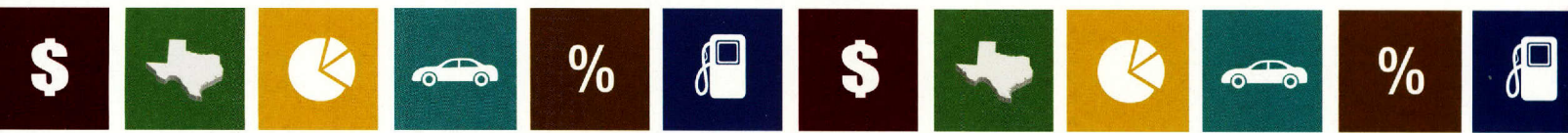


Texas Transportation Poll Results

Traffic congestion in Texas continues to worsen each year, but that's not changing how the vast majority of Texans feel about their cars and trucks. This and a variety of other insights come from the first Texas Transportation Poll conducted by the Texas A&M Transportation Institute's Transportation Policy Research Center (PRC).

The survey examines the travel behaviors and opinions of registered voters in Texas, and the results help identify what Texans think about daily transportation choices, challenges, funding and solutions. In short, voters support spending more on solutions but don't necessarily agree on how to do that.

- Nearly two-thirds of respondents said they support increased funding for transportation statewide.
- A majority also support increased funding for public transportation.
- Of the options offered, respondents favored dedicating the motor vehicle sales tax to transportation needs; they least supported raising the vehicle registration fee from \$65 to \$115.
- From a list of 15 different ways to improve transportation in the state, better traffic signal timing and clearing accidents more quickly were the most popular ideas. Building more toll roads was the least-supported option.



The findings also suggest that most Texans might be reluctant to make significant lifestyle changes, such as changing where they live, to cope with congestion.

Researchers say the poll was conducted in part to help inform transportation policy discussions, and that the findings confirm a number of things suggested by previous research.

“From dozens of focus groups over several years, we have seen that Texans, in general, have very little understanding of how we pay for the highways we use,” says PRC Director Ginger Goodin. “We now know that this lack of understanding is widespread, and it’s common among all demographic groups.”

The random sample survey responses were collected by mail, by phone, or online. The sample size of more than 5,000 provides for a statewide margin of error of plus or minus 1.5 percent, and allows the opportunity to investigate how attitudes and behaviors differ along demographic lines, including age, gender and education. Comparisons can also be made based on where respondents live, with the state divided into 12 regions. Researchers plan to repeat the survey in two years to measure possible changes in the travel choices and attitudes among registered voters in the state.

Access the full survey report and regional summaries at <http://tti.tamu.edu/policy/texas-transportation-poll>. ■

Texans are confused about how transportation is funded.

- Less than 1 percent of respondents know the correct amount they pay in fuel tax for every gallon of gasoline purchased and how that tax is assessed.
- Nearly half incorrectly think that the state’s motor fuel tax is a sales tax (a percentage based on the overall price of a gallon), while it’s actually a flat tax that does not change, regardless of the price.

Texans really depend on their cars and trucks.

- Ninety percent of respondents said they own or lease a personal vehicle as their primary means of travel.
- One-third reported walking to make a non-recreational trip in the 30 days prior to the survey, one-fourth used public transit, and one in 10 used a bicycle.

Texans are feeling the squeeze of traffic gridlock and higher gas prices.

- Three-fourths of Texans said they experience traffic congestion when traveling in their region.
- A majority view congestion as a byproduct of the state’s growing population and expanding economy.
- Because of higher fuel prices at the time of the survey, 60 percent have tried to drive less; the younger the respondent, the more likely he or she was to limit driving due to high fuel prices.



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1

Is the Costliest Number —

Managing Travel Demand to Reduce Congestion, Increase Mobility

When looking to buy a home, you're more likely to get the most bang for your buck when a lot of houses are on the market. The bigger the market, the more likely a seller is to accommodate how much you want to spend, right? It's simple supply and demand.

Similarly, when travel demand exceeds roadway capacity, the result is costly traffic congestion. The No. 1 culprit for traffic congestion is single-occupancy vehicle (SOV) travel — our reliance on driving ourselves wherever and whenever we want to go. Bumper-to-bumper traffic at peak travel times, like during morning and afternoon commutes, is often the result.

The Texas A&M Transportation Institute's (TTI's) Transportation Policy Research Center recently identified effective alternative strategies that can help Texas increase mobility by encouraging drivers to consider alternatives to SOV travel, even as Texas adjusts to changing demographics and emerging technologies.

To illustrate how much SOV travel contributes to congestion, researchers examined travel patterns of state employees in Austin, explains Stacey Bricka, manager of TTI's Mobility Management Program. Their travel patterns reflect typical commutes.

Researchers have updated the demand management toolbox with readily understood best practices for decision-makers to consider. Some strategies currently used by cities include programs promoting:

- Commute solutions that emphasize commuting alternatives (e.g., flexible work schedules and carpools).
- Park-and-ride options, where commuters park their cars securely in a communal lot and ride trains/buses or carpool to and from work.
- Vanpools that provide a formal arrangement (compared to less-formal carpools) in which seven to 15 individuals share a common vehicle.
- Shared-use mobility that promotes ride-sharing to reduce the costs associated with, for example, high-occupancy toll lanes.
- Telework arrangements that allow employees to regularly work from home or an alternative location.

Some regions rely heavily on trip-reduction ordinances that mandate a reduction in SOV travel. Others have achieved statistically significant reductions in vehicle-based travel through tailored programs that educate households about their travel options and use

travel surveys to document changes in mode usage over time. This tailored approach captures the societal shift to much busier schedules.

“For many commuters — especially parents — going to work is just one part of a hectic day,” says Bricka. “They have to juggle kids, doctor’s appointments and other commitments, so tailored marketing efforts help educate them about alternative travel modes for when the kids are at camp, or to get around on the weekends. Even occasional use helps reduce congestion.” ■



The No. 1 culprit for traffic congestion is single-occupancy vehicle travel — our reliance on driving ourselves wherever and whenever we want to go.



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TOSTADA Uses Stacked Data Layers to Provide the Best “Bang for the Buck”

IF THE CONCEPT OF LAYERING WORKS for a popular Mexican food dish, why can't the same concept work when analyzing data to prioritize roadway improvements?

That's the thinking behind a new approach that examines a comprehensive set of condition and performance measures, and weighs those factors to help determine where transportation improvement projects make the most sense. The approach is being pioneered by researchers at the Texas A&M Transportation Institute (TTI). They're examining congestion levels, crash frequency, pavement quality, bridge condition and freight value to create the first version of the TOol using STacked DATA (TOSTADA).

“With limited funding and an increased emphasis on fiscal accountability and information transparency, transportation improvements need to show that they provide the best ‘bang for the buck,’” says TTI Research Fellow Tim Lomax. “The Texas Legislature, in fact, called for such an approach in approving the state budget in 2011, requiring that highway projects have the greatest possible impact on a combination of factors, including safety, pavement quality and economic benefits, in addition to addressing congestion. The TOSTADA analysis model was developed with those collective needs in mind.”

The model uses geographic information system tools to illustrate individual color-coded data maps for each of five analysis factors. Data sets for each of those factors are visually layered, providing a thorough assessment of diverse and sometimes competing needs. A roadway safety project, for example, may also provide improvements in congestion, bridge and pavement

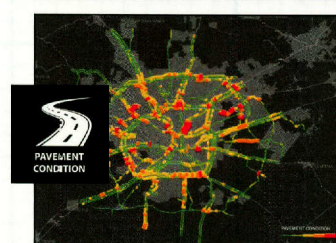
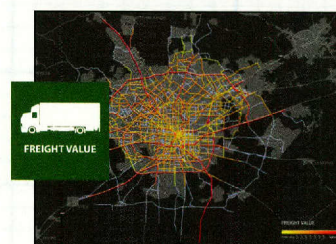
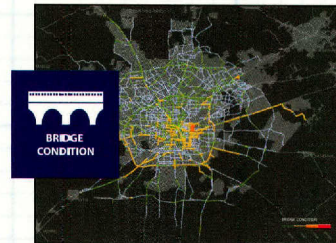
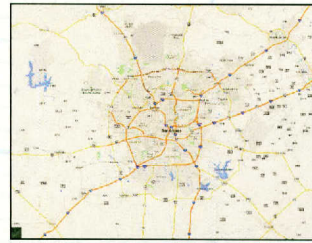
conditions, and the value of freight moved.

Ultimately, the intent is to use multiple data sources to draw insights and lead to a more thoughtful and comprehensive project comparison and selection process, as well as help to ensure more well-informed policy decisions. Too often in the past, researchers say, those decisions may have been driven by a process focused on engineering factors with less regard to economics, safety or quality-of-life considerations.

Better project comparison and selection can also enhance the public engagement process, helping to ensure that transportation system users are substantively involved in decisions on the best ways to invest increasingly limited transportation funding.

“Transportation planners can use this approach as a form of common dialogue with policy makers,” says TTI Research Scientist David Schrank. “That can help both parties illustrate investment costs and benefits more effectively, and make the case for the most appropriate improvement projects.”

The researchers note that the TOSTADA demonstrates the viability of the data-layering approach, but they also point out that more work is needed to refine the model. Future versions might involve the addition of other data sets, such as right-of-way availability, environmental impacts, demographics and benefit-cost ratios. ■



The gray maps are overlays of the first map to show all the different data sets.

Take these into account when deciding policy...

BRIDGE CONDITION
Good/fair
CONGESTION
High
FREIGHT VALUE
Medium/high
PAVEMENT CONDITION
Good/fair
SAFETY
Very high/high

Spend resources here?
Take resources from elsewhere?



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Teens in the Driver Seat Aims at Promoting Safer Driving in 100 New High Schools Nationwide in 2015



“We’re excited to build upon a six-year relationship between TDS and State Farm in Texas with this expanded initiative. Our unique, shared approach is to positively influence teens to be safer drivers, rather than try to scare compliance into them.”

*Russell Henk,
TDS Program Manager*

The No. 1 killer of U.S. teenagers is automobile crashes, especially during their first — and most inexperienced — year of driving. The Texas A&M Transportation Institute’s Teens in the Driver Seat® (TDS) program and State Farm® are enhancing their longstanding and successful relationship to prevent these tragedies.

State Farm recently provided \$350,000 in grant funding for TDS to reach out to 100 new U.S. high schools — approximately 100,000 additional teen drivers — in 2015.

“We’re excited to build upon a six-year relationship between TDS and State Farm in Texas with this expanded initiative,” explains TDS Program Manager Russell Henk. “Our unique, shared approach is to positively influence teens to be safer drivers, rather than try to scare compliance into them.”

For the past six years, State Farm has provided \$100,000 annually to help TDS positively influence teens in the state of Texas to improve their driving behaviors and embrace safer driving habits. TDS promotes awareness of the top five dangers of teen driving: driving at night; speeding and

street racing; distractions, such as cell phones/texting and teen passengers; not wearing a seat belt; and alcohol/drug use. With the program’s resources and staff support, high schools undertake a variety of grassroots outreach activities throughout the year in their schools and communities to help create a traffic safety culture.

TDS has won more than 20 local, state and national awards for its efforts. Since TDS was founded in 2002, Texas has seen a 70 percent decrease in the frequency of fatal crashes involving 15- to 17-year-old drivers and is the only state in the United States to see a drop every single year over that time span.

The enhanced relationship with State Farm extends the insurance carrier’s Celebrate My Drive (CMD) program, which engages with teens where they learn to drive — their local communities. The program encourages teen drivers to safely celebrate their newfound freedom with awareness and attention to the driving task. Each year, the CMD program awards 100 schools — 50 with student populations below 750 and 50 with populations above that number — community grants for that purpose. ■



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88th Annual Transportation Short Course Focuses on the Future

With a new leader at the helm and significant changes in how we travel on the horizon,

the Texas Department of Transportation (TxDOT) held its 88th Annual Transportation Short Course on the campus of Texas A&M University Oct. 13–15. The annual event, designed to inform employees about the latest innovations in transportation research, is organized and co-hosted by the Texas A&M Transportation Institute (TTI) and TxDOT.

“We’re working on something very special,” LtGen Joe Weber told the 2,000 attendees of the opening session. “We’re working to prepare Texas for a first-class future, a future that will not have drivers bogged down in congestion, a future that will mean safer roads and better protections for the men and women who build them. A future that generations of Texans will be glad we built.”

This was Weber’s first Short Course after being hired as TxDOT’s executive director in April. He said he wanted TxDOT to lead in producing innovative approaches to solving transportation problems rather than just react to advances as they come.

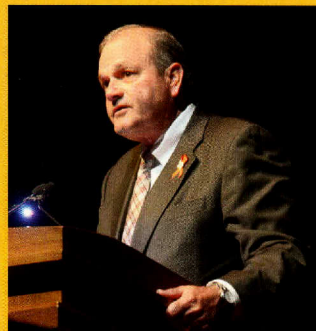
TTI Agency Director Dennis Christiansen told the audience, “The changes will be revolutionary, not evolutionary.” Christiansen congratulated Weber — formerly the vice president for student affairs at Texas A&M University — on taking the lead at TxDOT.

“If any state has the need to sort out how you combine strategic infrastructure with effective development and deployment of technologies, it’s Texas,” Christiansen said.

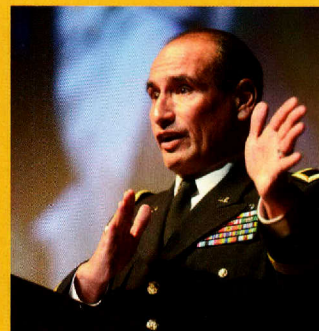
Numerous TxDOT managers received awards for their work on various projects around the state. And 10 employees



TTI Agency Director Dennis Christiansen at the podium during the opening session of the 2014 Short Course.



TxDOT Executive Director LtGen Joe Weber.



Commandant of the Texas A&M Corps of Cadets Brig. Gen. Joe Ramirez.

were honored with Extra Mile Awards, handed out each year to those employees that helped or, in some cases, saved the lives of others.

A highlight of the opening session was a speech given by Brig. Gen. Joe Ramirez, the commandant of the Texas A&M Corps of Cadets. His speech about leadership earned him a standing ovation.

In connecting his talk to transportation, Ramirez showed a photo of a large pothole. The image spanned the stage of Rudder Auditorium. “The road to success is full of potholes. You are going to hit some of them, and they will slow you down. What’s important is to never let a pothole stop you. Getting knocked down is life. Getting back in the fight is living,” he said. ■

TTI Advisory Council Looks to the Future of Transportation in Texas

100 Years of Cooperation: A Solid Foundation for Progress



The discussion at the Texas A&M Transportation Institute (TTI) Advisory Council meeting in Bryan, Texas, in October looked to the future direction of TTI research. Those research initiatives are possible because of the solid relationships formed over the past 100 years among The Texas A&M University System, the Texas Department of Transportation (TxDOT) and TTI.

Tommy Williams, vice chancellor of federal and state relations for the A&M System, opened the meeting by addressing the fundamental question of how Texas will fund its transportation system in the future. Since gas tax revenue — the traditional funding mechanism for system improvements in the state — is currently seen as

inadequate, determining new and sustainable funding mechanisms is key to meeting the needs of Texans in coming decades.

Continuing the look forward, TTI Agency Director Dennis Christiansen reported on the state of TTI and its research path going forward. A&M System Executive Vice Chancellor Billy Hamilton reported on the new Area 41 Institute, an initiative spearheaded for TTI by TTI Executive Associate Director Bill Stockton. Other briefings included TTI Assistant Agency Director Steve Roop's report on how TTI's Freight Shuttle is progressing toward a demonstration project and TTI Associate Director Ed Seymour's update on Accelerate Texas, the forward-looking initiative emphasizing connected vehicles and roadside infrastructure. A&M System Chancellor John Sharp was the luncheon speaker.

The research focus turned festive as Christiansen, TxDOT Deputy Executive Director John Barton, A&M System Chancellor John Sharp, Director of the Texas A&M University Press Charles Backus and co-author Roger Polson commented on the unprecedented and extremely successful collaborative relationship among TTI, the A&M System and TxDOT. The occasion for this celebration is the upcoming publication of *Miles and Miles of Texas: 100 Years of the Texas Highway Department*, scheduled for publication in 2016 by the Texas A&M University Press. Polson and Carol Dawson are co-authors of the book.

Regarding the 100-year celebration, Sharp said, "This state could not have transformed from an agrarian society to the 12th largest economy in the world without the partnership we are celebrating today."

"It's a relationship that's not only made the Texas highway system the envy of the nation, but that has led to innovations in highway, bridge and traffic design," said Barton. "Because of TTI's work, Texas pavements last longer, roadways are safer, and emergency response times are faster." ■



Left to right: Director of the Texas A&M University Press Charles Backus, co-author Roger Polson, TxDOT Deputy Executive Director John Barton, Texas A&M System Chancellor John Sharp and TTI Agency Director Dennis Christiansen.

Number of high school seniors driving after drinking has decreased from 29% in 1990 to 15% in 2012



16% of respondents reported driving while high from other drugs

Texas Teen Survey Reveals Shift in Impaired-Driving Cause

In 2012 — for the first time since its creation more than 20 years ago — the Texas Secondary School Survey found that more high school seniors reported driving drug impaired than those who reported driving alcohol impaired.

The survey has been conducted in Texas since 1990 and asks students about their use of alcohol and drugs and related behaviors. It is the only survey of its

kind that has consistently tracked impaired-driving behaviors by high school students for 22 years. The survey found that while the number of seniors driving after drinking decreased from 29 percent in 1990 to 15 percent in 2012, 16 percent of respondents reported driving while high from other drugs.

TTI's peer-to-peer-based U in the Driver Seat program aims to combat impaired driving in college students. "It is a widely known truth that high school seniors bring a lot of their established habits and behaviors with them to college," says Russell Henk, U in the Driver Seat director. "As these students make this transition, the choices they make are (more so than ever before) ultimately up to them. A combination of awareness and positive peer pressure can help influence their decision-making." ■

For more information about TTI News, contact **Rick Davenport** at (979) 862-3763 or r-davenport@tamu.edu.

Carlson Attends FHWA Visibility Workshop

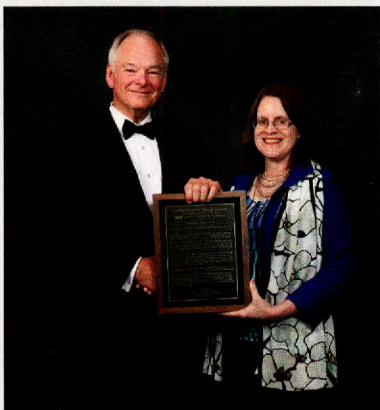


Carlson

TTI Senior Research Engineer Paul Carlson recently attended the Federal Highway Administration's (FHWA's)

workshop, entitled Breakthroughs in Vision and Visibility for Highway Safety, held Aug. 13–14. According to Carlson, the workshop was a good opportunity for top visibility researchers to share information and assist FHWA in prioritizing needs. Carlson and his peers focused on revising the visibility roadmap, which is a tool FHWA has used in the past to prioritize research needs.

"This workshop was a great opportunity for top researchers to offer suggestions to FHWA on how to prioritize what they should focus on in the future," says Carlson. "It was also a great opportunity as a researcher to collaborate with peers and develop cross-cutting ideas." ■



2014 International President W. Hibbett Neel Jr. presents the Burton W. Marsh Distinguished Service Award to TTI Senior Research Engineer Kay Fitzpatrick.

Fitzpatrick Receives Marsh Award for Distinguished Service

After 30 years of service, the Institute of Transportation Engineers (ITE) honored TTI Senior Research Engineer Kay Fitzpatrick with the Burton W. Marsh Distinguished Service Award during its Annual Meeting and Exhibit in August. The award recognizes an individual who has contributed to ITE's advancement. Fitzpatrick joined ITE in 1983 and has been a member of (or chaired) numerous committees. And she has contributed to more than 35 articles in the *ITE Journal* and the *ITE Compendium*.

"Being selected for the Marsh Award was a pleasant surprise for me," Fitzpatrick says. "The group attracts those that are dedicated to and interested in improving the transportation network." ■

TEXAS A&M TRANSPORTATION INSTITUTE
PUBLICATIONS

A full catalog of TTI publications and other products is online at <http://tti.tamu.edu/publications>. You can find the publications by searching for either the title or publication number listed here. Most of these publications are available as free downloads in portable document format (PDF).

Printed, bound versions of these reports are also available through the URL above.

RESEARCH VIDEOS

Access the research topics listed below via the URLs shown.

Most Texans Support More Funding for Transportation, New Poll Shows:
<https://vimeo.com/114683447>

TTI Partners with the U.S. State Department to Protect Americans Worldwide:
<https://vimeo.com/106825832>

Better Preparing the El Paso Region's Transportation System for Extreme Events:
<https://vimeo.com/106293407>

Connected Transportation Is Just up the Road:
<https://vimeo.com/97270483>

TTI's Sediment and Erosion Control Laboratory:
<https://vimeo.com/74722165>

TTI's Mobility Investment Priorities Project:
<https://vimeo.com/75786359>

TECHNICAL REPORTS

Accounting for Electric Vehicles in Air Quality Conformity — Final Report, by Joe Zietsman, **0-6763-1**, December 2, 2014.

Assessment of the Effectiveness of Wrong Way Driving Countermeasures and Mitigation Methods, by Melisa Finley, **0-6769-1**, December 4, 2014.

Construction and Monitoring of Thin Overlay and Crack Sealant Test Sections at the Pecos Test Track, by Tom Scullion, **9-1529-2**, October 24, 2014.

Crash Test and Evaluation of Locking Architectural Mailboxes, by Roger Bligh, **9-1002-12-9**, September 29, 2014.

Design Parameters and Methodology for Mechanically Stabilized Earth (MSE) Walls, by Charles Aubeny, **0-6716-1**, October 30, 2014.

Development of NTCIP-Based Portable Traffic Signal Evaluation System, by Nadeem Chaudhary, **0-6775-1**, October 29, 2014.

Evaluation of Costs to Process and Manage Utility and Driveway Permits, by Cesar Quiroga, **0-6756-1**, October 31, 2014.

HMA Shear Resistance, Permanent Deformation, and Rutting Tests for Texas Mixes: Final Year — 2 Report, by Lubinda Walubita, **0-6744-2**, November 25, 2014.

Improvements to Rural Intersections to Improve Motorist Compliance, by Srinivasa Sunkari, **9-1529-1**, October 30, 2014.

Maximizing Mitigation Benefits — Making a Difference with Strategic Inter-resource Agency Planning: Year Two Technical Report, by John Overman, **0-6762-2**, December 1, 2014.

Skid-Mounted Support System for Temporary Guide Signs, by Roger Bligh, **0-6782-2**, December 2, 2014.

Texas Cracking Performance Prediction, Simulation, and Binder Recommendation, by Sheng Hu, **0-6674-2**, October 16, 2014.

PROJECT SUMMARY REPORTS AND PRODUCTS

Determine the Cost for TxDOT to Process/Review/Approve Utility and Driveway Permits, by Cesar Quiroga, **0-6756-S**, October 31, 2014.

Develop a Pavement Project Evaluation Index to Support the 4-Year Pavement Management Plan, by Nasir Gharaibeh, **0-6683-S**, November 13, 2014.

Development of Design Standards for Mounting Temporary Large Guide Signs, by Roger Bligh, **0-6782-S**, October 30, 2014.

Development of New Delineator Material and Impact Testing Standard to Prevent Premature Failures Specific to Installation Application, by Dusty Arrington, **0-6772-S**, October 30, 2014.

Implementation Workshops for Best Practices for Managing Operating Costs for Rural and Small Urban Transportation Systems, Task 3. Finalized Workshop Materials and Presentations, by Suzie Edrington, **5-6694-01-P3**, October 16, 2014.

Improving Fracture Resistance Measurement in Asphalt Binder Specification with Verification on Asphalt Mixtures Cracking Performance, by Fujie Zhou, **0-6674-S**, October 15, 2014.

Introductory Guide to Integrated Ecological Framework, by John Overman, **0-6762-P1**, October 30, 2014.

Maximizing Mitigation Benefits — Making a Difference with Strategic Inter-resource Agency Planning, by John Overman, **0-6762-S**, October 28, 2014.

NTCIP-Based Traffic Signal Evaluation and Optimization Toolbox, by Nadeem Chaudhary, **0-6775-S**, October 20, 2014.

Partially Populated Catalogue of Measured Properties of Field Sections, by Fujie Zhou, **0-6674-P3**, October 29, 2014.

Presentation for New Binder Tests and Specification Change Workshop, by Fujie Zhou, **0-6674-P2**, October 29, 2014.

