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SEPTEMBER 2020

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president's message



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Rural Reflections

I grew up in a rural community with 54 students—the largest graduating high school class in its history. Two cars at the only four-way stop in our area was congestion, and summer was a pain because we couldn't get out onto the highway (tourists!). In transportation a “blinking” light defined your town, signs became target practice, and nobody did anything unless somebody died in a crash. You see the worlds as:

Rural – Open spaces equate to freedom, independence is valued, you work hard to get ahead, you're away from crowds, you create your fun, silence and dark skies abound.

Urban – Crowded, noisy, “you can't see the stars,” rules matter with so many people, lots of talk, slow, entertainment at your doorstep, amazing diversity of jobs (some where you can even earn a lot of money).

In rural areas getting from point A to point B is a lifeline. Grocery stores are not a few minutes away, but commonly 20+ miles...hospitals can be an hour (likely more) away...entertainment is hours away...and the airport is a day trip. In this world, the need for a pick-up truck isn't discretionary or vanity. Speed has a different context. When people talk transit, bike, and pedestrian, it's an entirely different world.

Public transit meant to me Greyhound or hitchhiking—neither of which continues today where I grew up. People are left with few mobility choices, particularly when they age in place. You are dependent on family and friends. Today, bicycle facilities mean economic development for small communities with recreational assets, yet many times, all the bicycle funding is mostly consumed in urban areas.

I knew growing up that urban folks in the Willamette Valley did not get it. Having lived in the urban areas of both San Francisco, CA, USA and Portland, OR, USA, I know rural folks struggle with understanding *why* they don't get it. How we think about these differences is as much about diversity as any demographic issue, and it says a lot about how we listen.

Alcohol and run-off-the-road are real, BIG transportation issues in rural areas. I had friends do both. They were lucky. Others were not. This can be corrected. We have a role. We need help from the technologists and vehicle manufacturers on driving under the influence, distracted or fatigued. Your car should not move when the driver engages in these proven dangerous activities. Given the time it has taken to get seat belts to the 90 percent level (50 years), let's hope we get there faster this time.

Horizontal curves, we can work on. It's time to implement recent recommendations from the National Committee on Uniform Traffic Control Devices to the Federal Highway Administration providing improved uniformity and guidance for advanced curve warning—from rumble strips to wider markings and signs that have proven results in enhanced safety.

Federal reauthorization in the United States provides an opportunity to focus on rural issues like fix-it-first, safety, and economic development. We can make a meaningful difference in rural communities by investing now. Investments in communication/5G (as noted in Steve Gayle's article on page 32) can make work-at-home a rural opportunity. Focusing on reduction of run-off-the-road crashes must be a high priority in our push for Vision Zero. Let's not miss this opportunity to work together to Shape Your Community.

Ransford S. McCourt, P.E., PTOE (F)
ITE International President



RANSFORD S. MCCOURT,
P.E., PTOE (F)

ITE International President



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Social Justice and Equality

In the wake of the Black Lives Matter movement, ITE leadership issued a statement on Social Justice and Equality that said in part:

"Transportation professionals have a profound duty to provide mobility solutions for all members of our society and to ensure that safe and dignified options exist for all. ITE believes that differences in background and experience enrich the culture and experiences of ITE for our membership as they do for the communities in which we live and work."

I wanted to share more behind why ITE made this statement, and made it now. As transportation professionals, we can make a significant impact on the communities where we live and work. ITE International President **Randy McCourt, P.E., PTOE (F)** is fond of encouraging us to "Shape our Communities," which has even more significance in the current context. Whether we work in the public or private sector, every day we make decisions on behalf of our citizens that significantly impact the quality of their lives. As we interact regularly with the public to plan, design, construct, and operate the transportation system, to the outside world we are often the face of our organization.

As a community of transportation professionals with a mission to "...serve the needs of (our) communities and help shape the future of the profession and transportation in the societal context"—how could we stay silent on this issue and not make our intentions clear? This is also a statement about ITE, who we want to be as an organization, and the diversity we want within our organization. We should reflect the diversity and richness that exists in our society and profession—today, we are not yet there.

It was important that our leadership acknowledge the need to support greater diversity in our profession and build a more diverse ITE. The Diversity Scholars program created under the leadership of Past President **Ken Voigt, P.E. (H)** and carried forward by the ITE Legacy Committee is working to provide opportunities for underrepresented populations with a focus on first generation college students. It is great to have two scholars in the program and see individual members and organizations contribute so more students can benefit from this program. The recent major donation from Transoft is a great example of the leadership that is needed on this issue.

Our Diversity and Inclusion Committee, led by ITE International Vice President **Alyssa Rodriguez, P.E., PTOE (F)** and International Director **Jeff Riegner, P.E., AICP, PTOE (F)**, is actively working to promote greater diversity and inclusion throughout our ranks. The Equity Plenary Panel and Diversity and Inclusion Workshop held at the recent ITE virtual Annual Meeting and Exhibition provided opportunities to continue these conversations.

I was pleased and proud to see our leadership respond quickly and affirmatively regarding our role as transportation professionals and the importance of increasing the diversity in our membership. To me this represented the best of ITE. Now we have the hard work of living up to this statement and these ideals. If you have ideas about how to increase diversity at ITE, you can reach me at jpaniati@ite.org or on Twitter: @JPanatiITE. For now, I leave you with the words of Congressman John Lewis: "*Every generation leaves behind a legacy. What that legacy will be is determined by the people of that generation. What legacy do you want to leave behind?*"

Jeffrey F. Paniati, P.E. (F)
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National Rural ITS Update

The National Rural ITS (NRITS) Steering Committee provides insight to the U.S. Department of Transportation (USDOT) Intelligent Transportation Systems Joint Program Office (ITS-JPO) on issues related to transportation technology applications to small communities and rural areas.

From the inception of the Rural ITS Conference convened in Redding, California in 1992 the guiding committee has been focused on its purpose of sharing knowledge and experience on connecting rural communities using transportation technologies. The NRITS Steering Committee role has expanded to provide content in the form of case studies, webinars, and workshops.

Conferences

In 2018 the NRITS Annual Conference and Exhibit was held in Fort McDowell, AZ, USA in conjunction with ITS Arizona's 25th Anniversary Meeting. For 2019, NRITS topics became a core session pathway at the 2019 ITE Annual Meeting in Austin, TX, USA, and again this year with the 2020 ITE Virtual Meeting and Exhibition.

Strategic Plan Developed

The NRITS Steering Committee created a new Strategic Plan to expand the voice of transportation needs of rural and small communities that can be supported through the application of transportation technologies and ITS. Their national vision supports access to transportation such that: *Traveler's complete trips are integrated and enabled through the use of ITS and transportation technology in rural areas, small communities and underserved populations.* Their mission is *to assist the rural transportation community in addressing transportation-related issues affecting non-urbanized areas to improve opportunities for travelers to make complete trips.*

In addition to being in alignment with ITS-JPO *Strategic Plan 2020-2025*, other factors shaping the NRITS Steering Committee's upcoming activities include:

- Interest by USDOT in the economic development and essential services in rural America and how transportation systems can support them.
- Unmet need to convene and incorporate diverse rural non-traditional partners not typically engaged in ITS such as tourism industry, tribal and local agencies, rural planning organizations, and economic development entities.
- Project administration complexity and risk associated with different funding
- Need to promote ITS strategies on implementation that guide local and tribal government agencies on understanding rural traveler and transport challenges and identifying and applying ITS technology solutions.



SHUTTERSTOCK / LUKASZ PAJAR

Looking Ahead

Looking forward over the next year, the NRITS Steering Committee will be expanding its activities to support rural and small communities. First, the initial planning to hold the NRITS Conference and Exhibit in the fall of 2021 as a standalone conference is already underway for a location in the Southeast. The call for abstracts is planned for the first quarter of the year.

In addition, the committee will be preparing interactive content for webinars and workshops on key topics of interest as well as content for case studies on noteworthy practices in rural ITS; a preliminary set of topics includes, but is not limited to:

- Policies needed to support the role of access to health care, grocery and food sources, freight service, economic development, trip coordination, and broadband access (Wi-Fi) in rural and underserved communities.
- Development of non-intensive purchasing mechanisms and innovative contracting methods to procure acquisition of ITS services, equipment, and systems, as well as market-ready technology innovations.
- ITS strategies that respond to sources of recurring and non-recurring congestion such as high traffic and tourism generators, work zones, and hazard events.
- Working institutional model(s) enabling whole area rural communications connectivity with consideration of public/private partnerships as an essential and critical backbone to ITS service, equipment, and system function in underserved rural areas.
- Utility, coordination, and performance of multi-state operations or maintenance services.
- Recommendations supporting rural architecture and standards for connected and automated vehicles.
- Recommended uses of data standards for the sharing of data between agencies (i.e., weather and environmental systems, commercial vehicle systems, AVL, V2I, etc.). **itej**

Learn More

For more information on Rural ITS, please refer to the NRITS website, www.nrits.org and the USDOT ITS-JPO Program Fact Sheet at <https://www.its.dot.gov/factsheets/nrits.htm>. If you have an interest in the upcoming potential topics for webinars, workshops, or case studies contact Steve Albert, Chair of the NRITS Steering Committee at steveaa406@gmail.com, or Douglas E. Noble, d noble@ite.org, ITE's senior staff member supporting the NRITS Steering Committee.



SEE YOU THERE!

Portland 21
Annual Meeting and Exhibition
July 18–21

PEOPLE IN THE PROFESSION

Obituaries

ITE recently learned of the passing of the following members. We recognize them for their contributions to ITE and the profession, and send condolences to their families.

Patricia Timbrook-McMullan, P.E. (F) of Fairfax, VA, USA passed away on May 26, 2020. She was a Life Member of ITE.

Dr. Vergil G. Stover, P.E. (F) of College Station, TX, USA passed away on July 29, 2020. He was a Life Member of ITE. [itej](#)



community.ite.org



ITE Headquarters



@ITEHQ



Institute of
Transportation Engineers

New Members

ITE welcomes the following new members who recently joined our community of transportation professionals.

Canadian

Cody Gerow
Shiva Haji Hashemi
Dale Hoban, E.I.T.
Amirhossein Khodabakhshi, EIT
Joseph A. Kruis, E.I.T.
Michelle Lee-Hunt
Jacob Malleau
Luiz Manfre
Caroline Ngan
Brad Michael Porter
Frank Tassone
Jeremy Tse, E.I.T.

Mid-Colonial

Michael Robert Brereton
Juliet Hirni
Yusaf Masud, P.E.
Rashid Mohammad Zahid Reza

Akissi Daisy Kouame
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Poonam Pokhrel Bhattacharai, E.I.T.
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Josafath Eli Dominguez
Bianca Thorpe, P.E.
Martin Vega

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Melodie Clayton
Diego Leonardo Gonzalez
Alexander Jordan Liston
Caitlin Yong

Rodney E. Brown, PTP
Larry Frostad, P.E.
Kumiko Izawa, P.E.
Asma Khan
Ethan Pence
Mosstafa Sadia
Becky Spangle, P.E.
Robert E. Stull

Florida Puerto Rico

Leland Dicus
Nathan Mozeleski
Trevor Stubbs
Michelle Vargas

Northeastern

Samuel Gavin
Elad Y. Mokady

Southern

Ashley Carpenter
Anthony Moses Encarnacion
Quincy Guerra
Haylee Hyatt

Global

Krishna N. Behara
Micheal Xiong

Great Lakes

Courtney Anderson
Nathaniel J. Shellhamer, E.I.T.
Sankalp Swami

Letters in parentheses after individuals' names indicate ITE membership status: S – Student Member; IA – Institute; M – Member; F – Fellow; R – Retired Member; and H – Honorary Member. Information reported here is based on news releases and other sources. If you have news of yourself or the profession that you would like considered for publication, please send it to Holly Stowell, hstowell@ite.org.

ITE Talks Transportation Podcast

New from the Thought Leadership Series



David Harkey, president of the Insurance Institute for Highway Safety and the Highway Loss Data Institute, joins the *ITE Talks Transportation* podcast to discuss connected and automated vehicles (CAVs) and two new studies conducted by the traffic safety research organizations. The first study cites data that illustrate the growing benefits of advanced driver assistance systems; the second reveals possible limits of automated systems in reducing crashes. He also addresses criticisms of the second study, and discusses the future of safety and CAVs.



All episodes available at www.ite.org/learninghub/podcast.asp | Subscribe for free via iTunes at <http://apple.co/2hOUz8t>

2020 EVENTS

Due to the fluid nature of COVID-19, event dates and times are subject to change. For an up-to-date listing of ITE event information, please visit <https://www.ite.org/events-meetings/event-calendar/>.

TEXAS DISTRICT ANNUAL MEETING

October 20-22 | Virtual Meeting

Visit www.texite.org for more information.

MOVITE FALL MEETING

September 23–25 | Virtual Meeting

Visit www.movite.org for more information.

MET SECTION ANNUAL MEETING

November 12 | Virtual Meeting

Visit www.ite-metsection.org for more information.

2021 EVENTS

JOINT ITE INTERNATIONAL
AND MOUNTAIN AND WESTERN
DISTRICTS ANNUAL MEETING AND EXHIBITION
July 18 – 21 | Portland, OR, USA

WHERE IN THE WORLD?

Can you guess the location of the "Where in the World?" photo in this issue? The answer is on page 50. Feel free to send in your own photos to hstowell@ite.org. Good luck! **itej**



Thank You, Transoft Solutions!

Transoft Solutions has donated \$100,000 to the ITE Diversity Scholars Program. This generous donation will be used to support the education and development of African-American, Native American, Alaskan, Hawaiian, or Hispanic/Latino heritage students pursuing degrees in transportation-related fields.

ITE is pleased to welcome Transoft Solutions into its **Legacy Society** at the **Visionary** (highest) level.



www.ite.org

Rural Responsibility

Steven Latoski, P.E., PTOE (M) is director at Mohave County Public Works in Arizona, USA, the fifth largest county by area in the continental United States. Steven manages maintenance and operation of county roads and facilities through a \$30 million department budget and 160+ staff.

Steven Latoski, P.E., PTOE (M)

Director, Public Works
Mohave County, AZ, USA

Education:

Master of Science, Civil Engineering,
Purdue University
Bachelor of Science, Civil Engineering,
University of Wisconsin – Platteville

Professional Affiliations:

Arizona Council for Transportation
Innovation, since 2019
TRB Committee AHB20,
Freeway Operations, since 2018
ITE National Rural ITS Steering
Committee, since 2017
President, Arizona Association of
County Engineers, 2017-2019
Chair, Western Arizona Council of
Governments Transportation Advisory
Committee, since 2011

Fun Fact:

As an undergrad, Steve spent hundreds of hours over four years delivering live radio broadcasts of college football and basketball as well as sports talk shows at WSUP, the University of Wisconsin – Platteville's campus station.



Steve at an installation of a new custom sign marking Mohave County's start of Historic Route 66, which is an international tourist attraction in and of itself.

ITE JOURNAL: You've been very successful in securing federal funding for several projects. Are there any that stand out to you that make you particularly proud?

LATOSKI: I am particularly proud of two complex project deliveries. First, Mohave County maintains 48 miles of Historic Route 66, and this includes crossing the Sacramento (Dry) Wash point of discharge into the Colorado River where the Wash drains watersheds across 1,300-plus square miles. A crossing crucial to local and tourist traffic circulation, it was often closed for many hours when subjected to monsoon storm activity. The county responded by pursuing a \$1 million Federal Highway Administration Accelerated Innovation Deployment discretionary grant for new bridge crossing at Sacramento Wash. Fabricated offsite, the 114-foot Sacramento Wash Bridge was placed in 87 hours, and garnered awards by the Association of General Contractors of America and Arizona Chapter of the American Public Works Association. Secondly, we obtained \$2,030,280 in Federal Highway Administration (FHWA) Safety Improvement Program funds with zero county match to reconstruct a six-leg intersection in Golden Shores, AZ, inclusive of 180 vehicle-to-vehicle conflict points, into the first roundabout on any state or local road countywide. Since its construction in April 2017, zero reported crashes have occurred.

ITEJ: What are some of the challenges of rural transportation (vs. urban) that you have embraced and found innovative solutions for?

LATOSKI: Traffic safety and pavement preservation represent leading challenges under limited transportation revenue in maintaining more than 2,100 road miles countywide. Instances of speeding and distracted driving amplify road hazards such as wildlife crossings and frequent curves and grades that drivers encounter on county highways. In response, and capitalizing on our exceptional in-house resources in fabricating and installing traffic signs and markings, we have seen success in installing custom pavement word and symbol markings squarely in drivers' field of view to emphasize potential hazard conditions, retroreflective sheeting on sign posts, 6-inch centerline and edge line striping countywide and repainted annually, LED raised pavement markers through high impact horizontal curves, driver feedback speed limit signs, road weather information system with sensor-actuated highway advisory radio message on a high altitude highway, and network of programmable and portable changeable message signs. FHWA spotlighted our accomplishments in its local road safety outreach initiative.

ITEJ: One of your mantras is *Future Forward – delivering 21st century operations*. What are some examples of how you have brought Mohave County into the future?

LATOSKI: Through talents of our public works professionals and information technology staff, we designed and implemented: 1) a smart phone application providing standardized electronic notification of road closures and openings by road maintenance workers from the field in real-time by e-mail and post to county social media for road conditions, and 2) a custom, GIS-interfaced culvert inspection tablet software application enabling form-based and photo record of in-house inventory and condition inspections of county-maintained road culverts and cattle guards. We even led all aspects of planning, design, and construction for our 38,800 square-foot LEED Silver Public Works building that opened in 2013! **itej**

Public Agency Showcase

In Recognition of
Infrastructure Week

As part of ITE's recognition of Infrastructure Week, we reached out to our public agency members to find out what projects are taking place in our communities. Much like last year, we had an overwhelming response! The following are some of the submissions we received. Stay tuned for more projects in future editions of *ITE Journal*, and thanks to all our public agency members who participated.

AUSTIN, TX, USA

"Black Austin Matters"

Austin Transportation Department (ATD) in **Austin, TX, USA** facilitated a community-driven effort in June 2020 to paint street murals supporting calls to address racial injustice in our city. In a fast-moving environment, ATD's Engineering and Signs and Markings teams provided technical and operational support for the murals led by local organization Capitol View Arts.

Downtown, artists painted "Black Austin Matters" on Congress Avenue, sometimes called "The Main Street of Texas." Through the historically Black commercial district on East 11th Street, artists also painted "Black Austin Matters." ATD's Traffic Engineering Division designed precise layouts for the messages to ensure legibility and fit with existing lanes. Signs and Markings provided its standard roadway paint and application expertise for the artists. The department also closed the roads to ensure safety for the artists and interested participants. ATD is proud to have supported this community-led project acknowledging the importance of Black Lives.



BURNABY, BRITISH COLUMBIA, CANADA

Willingdon Linear Park

The Willingdon Linear Park in **Burnaby, British Columbia, Canada** was identified by the city council as a high priority project to link the Brentwood Town Centre with the Hastings Neighborhood and community amenities within Burnaby. The project spans 1.73 kilometers (1.07 miles) along one of Burnaby's main north/south connectors (Willingdon Avenue). The scope included road rehabilitation, traffic safety improvements, utility upgrades, and a multi-use trail and green park space corridor fitted with street furniture, water features, and public art installations. Design and public engagement began in 2016, and construction commenced in 2017 and was completed in late 2018. The city worked with Eurovia British Columbia and ISL Engineering to deliver this project, which received the 2018 Silver Envision Award for Sustainable Infrastructure. The total project value is \$13 million.



CALGARY, ALBERTA, CANADA

Laycock Park Pedestrian Bridge



The Laycock Park Pedestrian Bridge in **Calgary, Alberta, Canada** re-establishes Calgary's North-South regional pathway connection and restores access to adjacent communities that were once compromised by the partial washout of an existing bridge during Calgary's 2013 floods.

This new bridge was designed by a local team and features durable cedar 37-meter (121 foot) glulam girders, pushing the limits of design and fabrication possibilities to avoid in-stream work. It also features a pedestrian and environmentally-friendly coating system and an innovative glass-fiber-reinforced-polymer wrapped glulam deck. Harvested from regional renewable resources, cedar provides the required strength, stability, and service-life for the bridge and demonstrates the usability of timber as a sustainable, efficient, and elegant alternative material for the bridge.

The new Laycock Bridges is one of its kind in Calgary, and is not only helping to preserve the community culture and natural environment, but is already helping to promote active transportation and recreation around the city.

Public Agency Showcase

CARY, NC, USA

Crossing the Triangle in North Carolina Via Greenway



The final segment of the White Oak Creek Greenway has been in the works for more than 20 years in **Cary, NC, USA**. It was completed this year via a 916-foot boardwalk and a 104-foot pedestrian tunnel under the CSX rail line. This long-awaited segment is one of the last needed to complete a 15-mile connection in Cary from Umstead State Park to the American Tobacco Trail. The lead consultant was Kimley-Horn and this project completed a critical missing gap in the Triangle and a portion of the East Coast Greenway. This connection allows users to travel across four counties on off-road trails (70 miles). They were not able to do a typical ribbon cutting due to COVID-19 pandemic, but it was highlighted on the statewide public television (UNC-TV) in a story on its "NC Weekend" show.



CEDAR RAPIDS, ID, USA

Fighting Floods with Sustainable Solutions

Since 2000, the Cedar River in **Cedar Rapids, ID, USA** has reached flood stage 15 times. While the city has become adept at flood fighting, the long-term goal is a permanent system that increases our resiliency against environmental hazards. The city's flood control system incorporates environmentally and socially conscious engineering to not only reduce the risk of flooding, but provide for recreational amenities and spur economic growth. In 2019, the Institute for Sustainable Infrastructure (ISI) awarded the Cedar Rapids' flood control system with the Envision Bronze rating for sustainable infrastructure. The project, which included a levee, pump station, and detention basin, turned otherwise unusable land into a public asset, complete with stormwater best management practices and recreational amenities, including a 12-foot walking trail. This area is just one example of a system that incorporates environmental, recreational, and cultural amenities. Learn more about Cedar Rapids' flood control at www.cedar-rapids.org/floodcontrol.



Cedar Rapids' Flood Control System has been recognized for its sustainable infrastructure, including the use of stormwater best management practices.

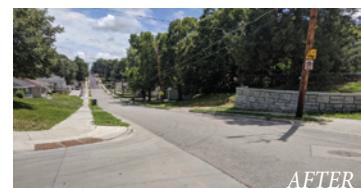
DES MOINES, IA, USA

Sidewalks for School and High Priority Routes

Regardless of how they get around, residents of **Des Moines, IA, USA** want transportation that is safe and connected for everyone. Streets without sidewalks can present major barriers to walking, especially for those with mobility restrictions, and may also create safety hazards if people choose to walk in the street.

Des Moines' transportation master plan, adopted in 2018, found only 57 percent of citizens satisfied with access to sidewalks; inventoried sidewalk gaps across 40 percent of property frontages; and prioritized infill based on proximity to schools, transit, commercial nodes, and neighborhood connectivity.

The city council programmed \$3 million annually to eliminate high priority gaps over 20 years. With younger students shifting to a 7:30 a.m. school day start, there was a concerted effort to separate children walking from motorized traffic during the dark winter months and morning commute. This investment in neighborhoods helps create a safe and connected transportation network for all ages and capabilities, promote equitable and sustainable transportation, and encourage healthy lifestyles.



FREMONT, CA, USA

Walnut Avenue Bikeway Project

In June 2020, the **City of Fremont, CA, USA** completed construction of the Walnut Avenue Bikeway project, extending for 1.2 miles from Mission Boulevard to Paseo Padre Parkway. The project scope includes a raised cycle track and four protected intersections. The Walnut Avenue corridor has one of the highest levels of biking in the city and connects to destinations including the Fremont BART station, housing, schools and local businesses. Project construction was funded by a \$5 million grant from the Alameda County Transportation Commission as a demonstration of best practices in bicycle facility design. The project aligns with Fremont's Bicycle Master Plan, which has the goal of significantly increasing bicycle travel by creating a network of bikeways that appeal to people of all ages and abilities. Streetsblog San Francisco recently named the project as the "Best Bikeway in the Bay Area" (June 23, 2020). More information about the project is available at <https://fremont.gov/3274/Walnut-Ave-Bikeway-Improvements>.



KNOXVILLE, TN, USA

Magnolia Avenue Streetscapes

Across several **Knoxville, TN, USA** mayoral administrations, revitalization efforts were established for East Knoxville's Magnolia Avenue Corridor. Public engagement was initiated in 2009 and rebooted again, resulting in the city making a \$7 million public investment for streetscape improvements on a model block section in hopes to trigger reinvestment and improve the quality of life for area residents.

Magnolia Avenue, state highway (US 11W) is situated in a predominately African American community east of the city's downtown core. The area is an important gateway linking downtown Knoxville to several adjacent and (most importantly) engaged citizens in the Parkridge, Chilhowee, and Burlington communities.

Presently a complete street, Magnolia Avenue accommodates all transportation users: pedestrians, bicyclists, motorists, and transit riders. However, these new improvements (landscaped center medians, stamped crosswalks, traffic and pedestrian signal upgrades, street trees, wider sidewalks, buffered bike lanes, benches, and bus shelters) now provide a safer and more accessible street network for both neighborhood residents and visitors to the area.



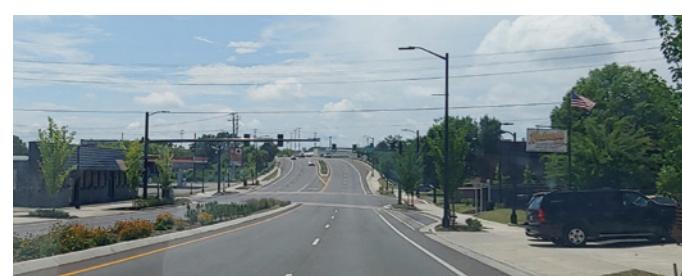
FRESNO COUNTY, CA, USA

Biola Sidewalk Project

Biola is a small, disadvantaged community located in **Fresno County, CA, USA** approximately 5 mile west of the City of Fresno, CA. The county constructed new sidewalks, curb and gutter, ADA curb ramps, crosswalks, and widened road shoulders on "G" Street between 5th Street and 7th Street. The improvements were badly needed for overall pedestrian safety and ADA accessibility, as well

as flood management for the rainy winter months. The project was awarded the 2020 American Society of Civil Engineers Fresno Chapter Award for Outstanding Small Project.

Every October, Biola hosts their annual Raisin Festival, consisting of live entertainment for the community. The current improvements will enhance the festival and help to showcase their expanding area to surrounding communities. To assist Biola with their ambitions for improving their downtown area, the County of Fresno is committed to pursuing future projects in cooperation with the community in order to lay a solid foundation for future expansion.



Public Agency Showcase

MANATEE COUNTY, FL, USA

Fort Hamer Bridge

In 2017, **Manatee County, FL, USA** opened the Fort Hamer Bridge spanning the Manatee River between two of the fastest growing communities in the state; Lakewood Ranch and Parrish. Construction began in 2015, culminating more than 100 years of visioning by county leaders to address the need for a connection between two quickly growing regions of Manatee County. The new bridge also completes an additional north-south connection for citizens living in northern portions of Manatee County to nearby Sarasota County to the south.

A bridge over Manatee River was first proposed by the Manatee County Board of Commissioners on September 9, 1909. It was not until 1989 that the bridge was formally added the county's comprehensive plan. The bridge opened to vehicular traffic on October 18, 2017 after it was temporarily open a month prior as an evacuation route for Hurricane Irma. The addition of another hurricane evacuation route is another example of why this critical project was so important.



MEMPHIS, TN, USA

"The Hampline" Pedestrian Corridor

After nearly 10 years of community engagement, planning, and design work, the **City of Memphis, TN, USA** completed the Hampline in 2020. The project is a nearly two-mile long all-ag- es-and-abilities bicycle and pedestrian corridor that features raised medians separating a two-way cycle track from motor vehicles, enhanced on-street pedestrian crossings, landscaping, and the city's first bicycle-specific traffic signals. In an outpouring of support, Memphians even crowdsourced \$75,000 to aid in completion of the project. The Hampline connects Memphis' arguably two most popular parks, most used greenway, and passes through a neighborhood that had long witnessed disinvestment and neglect.



MONROE COUNTY, NY, USA

Repurposed Bridge Panels



The **Monroe County** Department of Transportation in Rochester, NY, USA is currently working on a bridge reconstruction project on Salt Road in Webster, NY, which re-purposes three precast concrete bridge deck panels from the old Tappan Zee Bridge in the Hudson Valley Region of New York State. The panels had been used on the Tappan Zee Bridge since 2008. In 2019, panels were offered by the New York State Thruway Authority to local municipalities throughout New York State free of charge as part of the New NY Bridge Project, later renamed the Governor Mario M. Cuomo Bridge. Monroe County accepted delivery of 31 bridge panels in June 2019, and this is the first project where they are being installed. The three bridge panels are being installed on new integral concrete abutments, and an epoxy deck overlay will be installed to cover the original striping. As of press time, the Salt Road Bridge was expected to open to traffic on or around August 14, 2020.

MONTEREY, CA, USA

Bike and Pedestrian Access and Safety Improvements

The **City of Monterey, CA, USA** recently completed construction on the region's first signalized Class IV Cycle Track in the median. In addition to the Class IV facilities, the North Fremont Bike and Pedestrian Access and Safety Improvements Project included stormwater improvements, traffic signal improvements, ADA signals and curb ramps, shorter crosswalks, safety lighting, and bulb outs. This was a major infrastructure project for the city, and was developed out of the North Fremont Specific Plan to improve mobility and revitalize business activity along the corridor. This innovative project was designed by Kimley-Horn with construction management by Harris



& Associates and construction by Granite Construction.

The project was funded by Caltrans Active Transportation Program grant and was the highest ATP award in Northern/Central California in 2017. Future Plans for this facility include the connection to a more than 20-mile long planned trail network, the Fort Ord Regional Trail and Greenway.



ERIC PALMER, CITY OF MONTEREY

NORTH CAROLINA DOT

The Impact of Multimodal Transportation



The North Carolina Department of Transportation highlighted the impact of multimodal projects on quality of life and economic growth with the second annual Mobi Awards. In 2020, the program received 68 nominations from 38 counties, and winners were chosen in five categories. Several projects exemplified the Mobs.

The Granite City Greenway in **Mount Airy, NC, USA** provides nonmotorized mobility and bicycle, pedestrian and transit connections through access to a park-and-ride lot. The redevelopment of Onslow County's Albert J. Ellis Airport terminal included an executive terminal, hangar complex and taxiways. The addition of a dedicated mass transit/commercial vehicle loading area improved access to the passenger terminal.

The Surf City Topsail Island Bridge Connector replaced an aging, 1950s-era steel truss drawbridge. The new bridge includes a multi-use path that creates a safe pedestrian route, connects the mainland to the beach, sidewalks and a park, and completes a link to the Mountains-to-Sea Trail.

PORT MOODY, BRITISH COLUMBIA, CANADA

Murray Street Corridor

The Murray Street corridor has always been a vibrant part of **Port Moody, British Columbia, Canada**, and is home to Rocky Point Park, Port Moody Station Museum, and Brewer's Row. But the area's popularity highlighted a lack of cycling facilities and pedestrian safety concerns.

The Murray Street Upgrades Project was completed in June 2020. The end result was a lively corridor through Port Moody that makes sustainable methods of transportation a safe, enjoyable, and convenient choice. A new multi-use path for pedestrians and cyclists delivers the missing link in the City's active transportation network, providing an off-street connection from the paths on Murray Street to the Moody Centre neighborhood and transit station.

Coordinated, pedestrian-activated crossings reduce drive times through this busy street during rush hour and—more importantly—improve visibility for crossing pedestrians and cyclists. The project also included upgraded street lighting, improvements to park access, and a rain garden to improve the area's stormwater management.



Public Agency Showcase

SAN LUIS OBISPO, CA, USA

Pedestrian Hybrid Beacon



The **City of San Luis Obispo, CA, USA** completed construction of a pedestrian hybrid beacon at the intersection of Foothill Boulevard and Ferrini Road in December of 2019. As the highest ranking priority project in both the city's Safe Route to School and Anholm Neighborhood Greenway Plan, the foothill pedestrian hybrid beacon provides a safe and comfortable crossing for pedestrians and bicyclist to cross Foothill Boulevard—a high speed arterial with over 16,000 vehicles per day. The crossing provides a direct connection for residential neighborhoods to an elementary school and the Cal Poly University. Crossing volumes collected in January of 2020 showed a 300 percent increase of bicycle and pedestrian crossings during the AM peak hour. The pedestrian hybrid beacon is the first phase of the Anholm Neighborhood Greenway which will ultimately include 1.7 miles of separated bikeway connecting from Cal Poly into the downtown core.

SNOHOMISH COUNTY, WA, USA

Intersection Improvement with Trail Realignment

At the Machias Road S. and Machias Cutoff Intersection in **Snohomish County, WA, USA**, the existing all-way stop intersection had complicated geometry and a separate trail crossing 130 feet away. To improve operation of the intersection a traffic signal was installed with realigned approaches, turn lanes, shoulders and the trail crossing as a dedicated pedestrian phase. Project constraints included critical areas on all sides, replacement of a failing culvert with a 17-foot fish-passage concrete box culvert, and many existing utilities that converged at this intersection. The project required coordination with local tribes, permitting agencies, various County departments including Parks and Recreation, six nearby property owners, and seven utility franchises. The project was successfully constructed in one construction season by relocating conflicting utilities prior to construction, managing the traffic (10,000 ADT) with a temporary road, managing the high number of summer trail users with a temporary trail, and successful timing of the fish passage culvert replacement to fit in the limited in-water work window.



SUMTER COUNTY, FL, USA

Parking Incorporated into Architecture

This project is a two-story precast concrete parking facility with parking for 328 vehicles to service **Sumter County, FL, USA**'s historic courthouse, judicial building, property appraiser, and tax collector's office. The design intent was to maximize the number of parking spaces on



the site while complimenting the surrounding architecture without overpowering the historic courthouse. Existing site limitations forced the footprint of the parking facility to stand proud of the historic courthouse's front door, closer to N. Florida Street. Therefore, the team made efforts to minimize the height of the towers of the parking facility to be proud of, yet stand subservient to the historic courthouse. We used many of the same building materials and architectural features that are prominent on the historic courthouse to seamlessly connect the campus architecturally. The team heavily landscaped a meandering walkway that connects the parking facility to the historic courthouse and judicial building creating a naturalistic atmosphere of both new and preserved landscaping. New site lighting to match the existing architecture was added around the entire facility and connecting walking paths. A new accessible ramp in front of the historic courthouse with service to the existing parking lot on the west side of N. Florida Street was also integrated into this project.

VANCOUVER, BRITISH COLUMBIA, CANADA

Improved Passenger Communication Infrastructure

TransLink—the public transportation provider in **Vancouver, British Columbia, Canada**—is undertaking a challenging project to improve passenger communication infrastructure in 33 rapid transit stations. The project involves updates to the public address (PA), closed circuit television (CCTV) cameras, and platform displays. More than 2,800 devices will be installed. Work on this aging infrastructure was conducted in active stations, so contractors had to safely work around the travelling public. When complete, the displays will provide real time information, to improve the everyday customer experience by providing better information about train arrival times, which was not provided prior to the project. During service disruptions, the PIDS will provide important information to customers and the new PA will provide improved audibility of announcements. The improved CCTV cameras will help enhance security. Together the improved infrastructure will benefit passengers in normal times and during emergencies, and TransLink has already received excellent feedback from the public.



YORK REGION, ONTARIO, CANADA

Vaughan BRT – Highway 7 West and Bathurst and Centre

New dedicated Bus Rapid Transit (BRT) lanes (rapidways) in **York Region, Ontario, Canada** have connected people and places across two urban growth centers in Vaughan and Richmond Hill. Project features include:



- **Faster rapid transit:** dedicated rapidway lanes allow for significant reduction in travel time.
- **An attractive, accessible streetscape:** wider, pedestrian-friendly boulevards and separated, raised bike lanes and shared-use path, giving people more active transportation choices.
- **Safe passage for people walking, jogging, or cycling over a major highway:** York Region's first median multi-use path along Highway 7 is protected by concrete barriers, with signalized intersections at each end that enable safe crossings.
- **Fast lanes for emergency services:** allows police, fire, and ambulance vehicles usage of rapidways for emergencies.
- **Upgraded utilities:** new water main, fiber optic cable, gas main, and storm sewers are installed during construction.

The vivaNext rapidway projects will benefit communities for years to come! **itej**

WACO, TX, USA

Unique Pedestrian Safety Campaign

The Texas Department of Transportation (TxDOT) has undertaken a massive \$342 million construction project in **Waco, TX, USA** on I-35, one of the state's most heavily traveled highways. The area also has a high number of pedestrians regularly crossing the highway to get to Baylor University, the Texas Ranger Museum, and athletic complexes on the east, and downtown, the convention center, hotels, and popular restaurants on the west. Safety is a top priority for TxDOT, and the agency has initiated a noteworthy and unique pedestrian campaign that includes:

- Facilitating a committee focused on pedestrian safety and comprised of local and advocacy group leaders,
- Launching a BE SAFE BE SEEN campaign focused on education and awareness highlighting "Stay Alive, Don't Cross I-35," Developing an online map resource highlighting pedestrian crossing locations and up-to-date adjustments to a constantly changing construction zone, and
- Installing pavement decals that share safety messages and link pedestrians to online maps and crossing diagrams.



A Member's Perspective: Strategies for Making Traffic Engineering Relevant in our Cities

By Peter Koonce (M)

"May you live in interesting times" is a nearly 100 year-old saying that helps me reflect on today's challenges and tomorrow's opportunities. In unprecedented times, that includes identifying priorities for my own engineering practice and how to improve our effectiveness. Challenges in our communities across the world are immense. The combination of climate change, increasing inequality, and the renewed call for racial justice requires a commitment to our profession's duty to address the mobility, safety, and maintenance of the transportation system—and specifically, the portion that you're responsible for. The recent call for ITE members to center equity in our work is one that is important to moving our profession forward.¹

If cities have been humanity's greatest engine of opportunity because of their ability to connect people, then traffic signals and our engineering discipline are important bearings in those machines. Traffic signals offer the ability to keep people moving safely in our communities. In this article, I offer six strategies to advance our ability to positively impact our communities. These strategies are based on an awareness of relevant research and hopefully will provoke additional discussions about how the transportation engineering profession can advance.

Focus on Equity and Incorporating Transportation Justice in Maintenance and Operations Initiatives

The Portland Plan states the following: "Equity is when everyone has access to the opportunities necessary to satisfy their essential needs, advance their well-being, and achieve their full potential."² The City of Portland, OR, USA was committed to early actions to advance equity in our projects, including during a citywide LED street lighting replacement program.³ Lessons learned from this effort included the importance of tracking activity beyond simple geographic boundaries, and more specifically to attributes including racial demographics. By knowing that disparities have existed, agency staff can advance transportation justice by taking proactive steps to ensure that our citizens receive similar levels of service when it comes to maintenance and operations. To be more equitable, we are using the National Association of City Transportation Officials (NACTO) Equity Committee definition that declares "Equitable transportation is the process and outcomes of ensuring that our transportation systems are inclusive of, meet the needs of, support, and prioritize marginalized or underrepresented communities (race, physical ability, geographic location) where institutional and structural barriers impacting mobility and access have been eliminated, enabling opportunity for both economic and social growth." The Portland Bureau of Transportation's recent strategic plan echoed that by asking staff to ask whether actions "advance equity and address structural racism."

Public agencies have opportunities every day to incorporate equity into our work. From ensuring that proactive maintenance and traffic signal inspections happen in communities of color to considering where investments in intelligent transportation system measures are made, these efforts work to address past inequities. Proactive maintenance can provide the community with operational improvements—ones that would otherwise go unrequested because of the lack of trust in government officials who may not have served their interests in the past.

Implement Proven Safety Measures

In the January 2014 *ITE Journal*, **Sam Schwartz, P.E. (F)** posed the question “Are Transportation Engineers Still Relevant?” He called on us to 1) get ahead of the curve, 2) work on communication skills, 3) grow into political roles, and 4) diversify our community in order to stay relevant. While I whole-heartedly endorse these four actions for our collective standing, I also want the profession to continue to advance technical solutions to address the most significant issues in our communities using science. Amidst all the challenges that we face as an industry, our technical skills must be at the forefront of the Institute, continuing to balance the importance of engineering where applicable. Core to being effective engineers is math and physics, but there is importance in understanding practical limitations of that science.

An example of where we must be mindful of new approaches is the recently released *Guidelines for Determining Traffic Signal Change and Clearance Intervals Recommended Practice*.⁴ One of the primary concerns fellow colleagues and I have is that the equations and guidance provided within the recommended practice went without sufficient peer review by practitioners or the research community. The recent call by ITE for more research rings true on this subject, as implementing the theoretical calculations without supporting research presents significant risk for agencies. Fortunately, the Federal Highway Administration (FHWA) has established a Pooled Fund Study that state DOTs and local agencies can participate in and more information is available at <https://www.pooledfund.org/Details/Solicitation/1536>.⁵ Updating signal timing, modifying signal phasing, and other measures can be taken to improve the safety of our intersections. Our industry should do more to study these benefits and learn from one another.



Link Traffic Signal Timing Optimization Procedures to Agency Policies

The traffic engineering community gets challenged on social media for our practices. By connecting our engineering procedures to the policies, we can be seen as part of the solution to addressing challenges. Our efforts during the pandemic have focused on changing the use of streets to meet the need of local businesses. Portland crafted one of the country's first Pedestrian Master Plans in 1998 and set national precedent with its "pedestrian first" transportation strategy for people movement. Our traffic signal timing and design practices have followed the directions set out from the Ped PDX Plan.⁶ This new plan resulted in engineering staff revisiting guidelines for protected left turns and scrutinizing past use of permitted left turns where people are walking and bicycle facilities are present. Staff have implemented more than 20 leading pedestrian intervals in the past year and sought to study the conditions where no turn on red would increase the safety of our intersections, following closely the ITE Committee following the Rescission of the ITE Recommended Practice last year.⁷ Accessible pedestrian push buttons are implemented immediately upon request and required with all new traffic signal projects with very few exceptions. This effort has led to increased dialogue with the advocacy community and their support for future traffic signal improvements.

Test and Verify Improved Detection for All Users

According to the Centers for Disease Control and Prevention, 26 percent of adults in the United States have some type of disability, and more than half of those people have difficulty walking or climbing stairs. Our fellow residents are an important part of the population, and too often we fail to have the empathy for them when we make decisions at traffic signals. It is also important to note the various functional types of disabilities, (i.e., mobility, cognition, independent living, hearing, vision, and self-care) and the challenges these disabilities present at traffic signals. If the pandemic has not raised your attention to the need for further research on passive detection and improving the use of new technology, I can ask—when will we ever embrace these techniques? Incorporating new technology is not without its challenges, so my challenge to each us as public agency staff is to consider hiring an intern, prioritizing candidates that might not otherwise have the opportunity to work in the industry, and work with them to test and evaluate these new technologies. Collaboration and sharing the experience with adjacent agencies will provide broader exposure to the industry for those currently underrepresented within our profession.

Introduce and Embrace Innovation

The willingness of our profession to embrace innovation is often demonstrated on the pages of *ITE Journal*, but our ability to improve day to day performance is limited. The improvements we read about are often difficult to recreate. In many cases, innovation is limited by the ability to consistently evaluate the performance. The limited application of artificial intelligence (AI) in our industry is an example where we can improve. The opportunities for using AI to solve transportation system management and operations challenges have only recently been considered by FHWA.⁸ It is worth stopping to pause whether AI is just the newest measure, recognizing that a paradigm shift is needed to harness the power of AI for traffic signals to function more effectively and to meet the varying needs of the public, transit agencies, and freight providers. Ideally, an AI system will provide predictive capabilities for all users based on historical data, enhanced sensors, and objectives defined by the user. Describing objectives and the intended results is a key step that we often miss in managing innovation. Selecting and designing performance measures that will be meaningful for system assessment is critical to capture the tradeoffs of the optimization.

Count Something, Measure Performance, and Write About It

This strategy must be credited to Atul Gawande, a surgeon who wrote the book *Better: A Surgeon's Notes on Performance*. We need to do a better job of collecting high quality data, measuring objective based performance, and writing about how it worked so we're all learning together. Traffic controller software is programmed to enhance the mobility and safety of movements, yet most of us have limited background in relevant software. This is one reason our public spends hours in congestion and people continue to die on our streets. When significant delays—or worse—occur due to failing equipment, ideally, we would address this with the urgency of a surgeon. The impacts of signal operations and changes to improve are often underestimated in the programming of budgets. Even when adequate budget and staff are available, it can be challenging to allocate resources when there is limited knowledge about where systems are operating poorly. A lack of adequate performance reporting means the actual quality of the system degrades from day to day, even year to year—and we do not have a story to tell. Adequate performance reporting means that enough information is provided to the system operator to know whether the quality of operations is satisfactory, as well as to suggest what changes to the control strategy might warrant expending the public's limited resources and have a positive impact. The Automated Traffic Signal Performance Measures (ATSPM) is a wonderful step toward achieving this strategy. Efforts are needed to make ATSPM multimodal and inclusive of safety.

Conclusion

Traffic signal operations and maintenance is important because it directly affects the quality of our transportation system. It affects virtually everything within our communities. Signal timing and maintenance impacts the time we spend traveling, the quality of the air we breathe, the safety of roadway travel, the costs of our trips, and many aspects of our daily lives. A clearly defined signal timing policy should be an extension of a region's transportation policy, reflecting a region's values in the operations and safety on the street. The context of the term policy is to support strategic objectives and be ready to manage change. With change, a few of us become early adopters, some later, and others are skeptics that will eventually be replaced. By being willing to recognize the inadequacies of what we do, we may be better able to seek solutions to meet the challenges we face. [itej](#)

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Peter Koonce (M) lives in Portland, OR, USA and has worked in both the public and private sectors implementing innovative multimodal transportation projects. He has served as an adjunct professor at Portland State University teaching courses in transportation engineering and has lectured at the Massachusetts Institute of Technology, the University of Idaho, and the University of Arizona. He is on the Executive Board of the National Committee on Uniform Traffic Control Devices. He has been a researcher on several National Cooperative Highway Research Program projects and was principal investigator for the 1st Edition of the Traffic Signal Timing Manual. Peter has been a significant contributor to several guides published by the National Association of City Transportation Officials. Peter is a member of ITE and served on the Technical Advisory Committee for the recommended practice Guidelines for Determining Traffic Signal Chance and Clearance Intervals.

Public Agency Council

Who We Are

The ITE Public Agency Council (PAC) is the voice of the public sector within ITE. The PAC serves as a sounding board for the ITE Board of Direction on the strategic direction of ITE, provides a forum for collaboration among members from the public sector, and, working with ITE staff, helps to identify and develop products and services of benefit to ITE's public agency members. ITE looks to the Public Agency Council regularly to spearhead dialogue on emerging trends and key issues.

The Public Agency Council is one of three employer-based councils within ITE: the Consultants Council, Industry Council, and Public Agency Council.

These three Councils bring value to organizations where ITE members work and to bring together leaders in the public and private sector. These three councils work both jointly and independently to shape the future direction of ITE and influence the future of the transportation industry.

What We Do

The PAC Executive Team meets on a quarterly basis to discuss key areas that we think need addressing by ITE leadership and identify what we can do to provide value to our members. In addition, you can follow activity on the Public Agency Community on ITE's e-Community. Our goal is to create, support the development of, and share valuable resources with public agency members. In the past year, we've been working on the following:

Safe Work Zones: During National Work Zone Awareness Week, the PAC presented a discussion paper for public agency members that shared how Florida DOT is using technology to improve the safety and mobility of workers and travelers. This includes leveraging intelligent transportation systems and connected an automated vehicle technology to create smart work zones.

Big Data/Data Analytics: Throughout the spring, ITE hosted a number of Big Data/Data Analytics listening sessions in which PAC members participated. In addition, the PAC helped support a webinar on this topic along with the ITE Industry Council that provided examples of public agency's partnership and use of data from industry providers.

Development of a Consultant Selection Guide: This product is being prepared in collaboration with the Consultants Council and is intended to be a guide for public sector officials responsible for selecting professional consultants to perform services relating to transportation systems, particularly for mobility and safety. The guidebook will assist public agency staff in engaging the most appropriate consultant for a given assignment and help explain the value proposition to consultants.

Traffic Incident Management Programs: The PAC and the TSMO Council hosted a workshop at the recent ITE Annual Meeting that focused on arterial TIM strategies while highlighting innovations in technology, data, and training through presentations, group exercises, and delivery of a training module. Participants learned from peer practitioners so they could be better positioned to share knowledge and apply best practices in their respective local agencies.

Developing Relationships with Elected Officials: Also at the ITE Annual Meeting, the PAC supported a panel discussion, by request of all of our Council members, on how to establish and maintain effective relationships with members of governing boards and other regulating bodies.



Webinars: The PAC has partnered with other Councils in developing a number of recent webinars for ITE members, including:

- Traffic Signal Systems and Centralized Preemption/Priority
- Engineering Liability, Discretionary Immunity, and the Duties of Transportation Agencies
- Transportation Career Paths and Opportunities

How you can get involved:

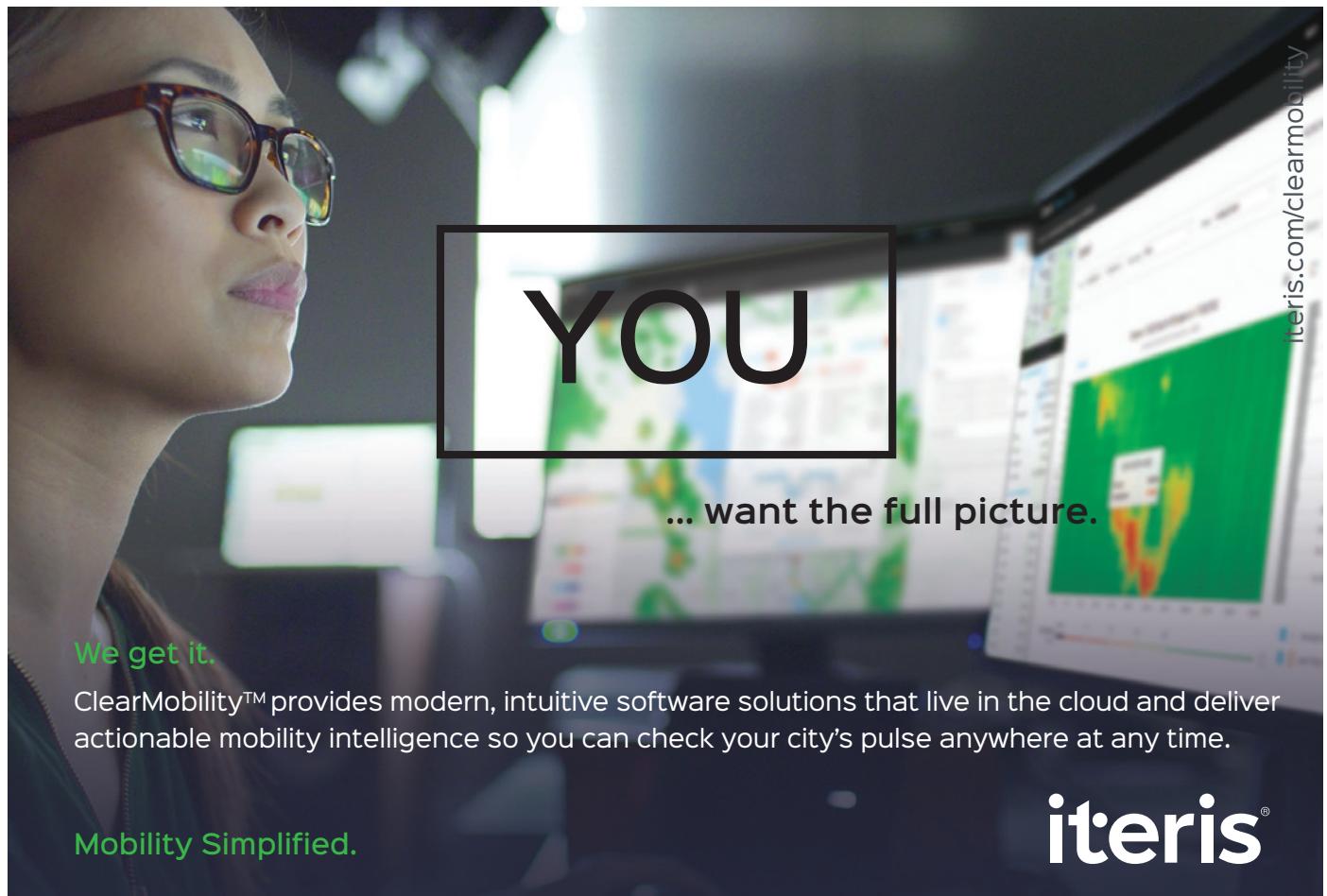
All ITE members can join the PAC on our e-Community. There you can follow important issues that are coming up and stay up to date on our activities. We want a diverse group of voices to help lead our Council and bring value to our members. We are always looking for new people to get involved, whether it be in supporting a product we are developing, like the *Consultant Selection Guide* or putting together a webinar.

If you have something important that you think needs to be addressed or that you would like to share information about, you are invited to start a discussion on e-Community or contact Colleen Agan at cagan@ite.org to participate in one of our meetings. [itej](#)

Contacts

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Texas District Administrator



Dave N. Carter, P.E., PTOE (M)

Principal, Traffic Engineering Manager
Stantec Consulting Services Inc.

Education

Bachelor of Science, Civil Engineering,
Texas A&M University, 1989
Master of Engineering, Civil Engineering,
Texas A&M University, 1990
MPA Graduate Certificate in
Local Government Management,
University of Texas at Dallas, 2012

Professional Affiliations

American Society of Civil Engineers
ITS Texas – Board of Directors, 2008-2018;
President 2017

ITE Involvement

TexITE District Administrator/Chief
Financial Secretary, since 2016
TexITE, President, 2012
TexITE, District Officer 2010-2013
TexITE Consultants Council,
Chairman, 2005-2006
TexITE, District Representative, 1999-2001
TexITE, Greater Dallas Area Section Officer
1996-1998; President, 1998
Texas A&M ITE Student
Chapter Officer, 1988-1989

Awards

TexITE Younger Member of the Year, 1999

In celebration of its 90th anniversary, ITE is recognizing each of its District Administrators throughout the year in a series of profiles. Each month this column will also feature historical facts and figures on the various Districts, including important dates and people throughout their history.

The Texas ITE (TexITE) District Administrator role is an appointed position, which **Dave Carter, P.E., PTOE (M)** assumed in 2016. **Dr. James Williams, P.E. (F)** served in the role for 25 years, followed by **Melisa Finely, P.E. (M)** who served for two years. As such a large undertaking for a volunteer, Dave certainly had big shoes to fill. After being involved in TexITE for 30 years and having served in numerous elected positions at the Chapter, Section and District level, Dave has a lot of historical knowledge of how the organization has been run. More importantly, he says, is that he knows who to ask for assistance!

During his 30-year career, Dave has had the opportunity to work in academic research, private sector consulting, and the public sector. He is back in consulting now, but has found all areas of his career to have been very rewarding and fulfilling. His transportation career and involvement with ITE began at Texas A&M University where he served as an officer with the Student Chapter and worked for the Texas Transportation Institute as a research assistant in graduate school.

After graduating with a master's in engineering, Dave became a consulting engineer at Barton-Aschman Associates, a traffic engineering and planning firm, which was a subsidiary of Parsons. Over a 16-year period, he escalated from engineer in training all the way up to vice president of Parsons.

In 2006, he took the opportunity to begin his public servicer career at the City of Richardson, TX, as their assistant director of Development Services. There he oversaw the Traffic and Transportation department. Though he achieved many goals in 12 years at the city, he feels his greatest achievement was initiating, developing, and overseeing the implementation of 25 miles (40.2 kilometers) of bike lanes. The first bike lanes in Richardson were installed in 2009—a time when the Dallas, TX area was not known for being bike friendly. Now Richardson is recognized as a Bike Friendly Community by the League of American Bicyclists.



TexITE leadership at the ITE Annual Meeting in Austin, TX, USA in 2019.



He shifted gears again in 2018 and jumped back over the fence to the private sector, and is now a principal at Stantec where he oversees the firm's traffic engineering practice in Texas.

Dave has been a member of ITE for more than 30 years and first became involved at the Student Chapter at Texas A&M University in the late 1980s. Dave credits his involvement in ITE as being instrumental to advancing his career, providing him with numerous opportunities for professional development and connecting him closely with a strong network of leaders. All of the people he would consider his mentors and close personal friends have also been members of ITE.

Dave's advice for younger members and students is to get involved with your local chapter of ITE, participate as much as possible, and get to know your peers. ITE Districts, Sections, and Chapters are always looking for people to help work on committees and to help organize social and professional development events. By getting involved, you will not only grow professionally, but will formulate relationships that will last for your entire career.

He also recommends that, from a practical standpoint, young professionals should start saving and planning for retirement very early in your career. When you first start out it may not seem like you have the finances available to start saving, but it's important to get started early and make it a routine with every paycheck. When you are comparing job opportunities at various companies and/or agencies, don't just look at salary—you need to compare the whole package, including retirement and health benefits! **itej**

Getting to Know ITE's Texas District

Sections

Brazos Valley Section
Capital Area Section
Greater Dallas Section
Greater Fort Worth Section
Greater Houston Section
South Texas Section



Membership

1,155 members

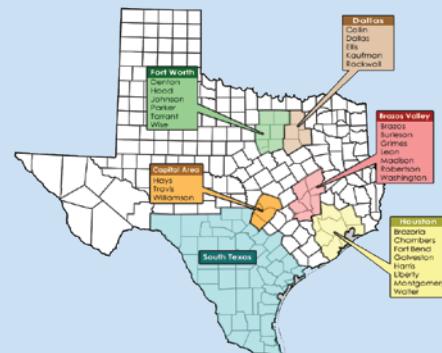
Student Chapters: 10

District Leadership

President – **Marc Jacobson, P.E., PTOE (M)**
Vice-President – **Paul Luedtke, P.E. (M)**
Secretary-Treasurer – **Erin Eurek, P.E. (M)**
International Director – **Dale Picha, P.E., PTOE (M)**
Immediate Past President – **Manu Isaac (M)**
At-Large Representative – **John Habermann, P.E. (M)**
Brazos Valley Section Representative – **David Florence, P.E. (M)**
Capital Area Section Representative – **Vivek Deshpande, P.E., PTOE (M)**
Greater Dallas Section Representative – **David Halloin, P.E., PTOE (M)**
Greater Houston Section Representative – **Suzanna Set, P.E., PTOE (F)**
Greater Fort Worth Section Representative – **Jennifer Butcher, P.E., PTOE (M)**
South Texas Section Representative – **Nick Arnio, P.E., PTOE (M)**

Did You Know?

- Since 1954, TexITE has hosted two District meetings each year that enjoy robust attendance. Recent District meetings have been joint meetings with ITE International, the Western District, or with ITS Texas. One event put on at each meeting is a Texas Hold'em Poker Tournament, which is free for all attendees to join and a great social networking opportunity for everyone!
- A large portion of Texas not within an urbanized area is represented on the TexITE Board by an At-Large Representative. The At-Large area constitutes more than 60 percent of the state but only about 7 percent of TexITE's membership.



This map displays the Sections of TexITE. The portions not highlighted are part of the At-Large area.

Historical Perspective

- In 1954, TexITE was first formed as the Texas Section with just 24 members.
- As early as 1958, local meetings were taking place. "The Fort Worth/Dallas group met at Amon Carter Field for dinner with seven members and their wives in attendance," according to TexITE history documents.
- The Texas A&M student chapter officially received its charter from ITE in 1962.
- The Texas Section became a District in 1987.

Looking Back: Transportation through the Decades

In celebration of ITE's 90th anniversary, throughout 2020 *ITE Journal* will feature a monthly snapshot of the transportation industry by decade, beginning with the turn of the 20th century through present day. These are the technologies, events, and key players that transformed transportation to bring us where we are today.

2000s

The year 2005 marked the 75th anniversary of ITE. The Millennium Fund was created to help ITE make move to a new office space in 2000, and after 22 years, ITE moved from School Street SW in Washington, DC, USA to 14th Street NW. ITE ushered in Online Learning and Professional Development Training Modules, funded by the newly created Professional Development Program Fund. ITE also expanded its reach by completing a federally funded project, the National Traffic Signal Report Card.

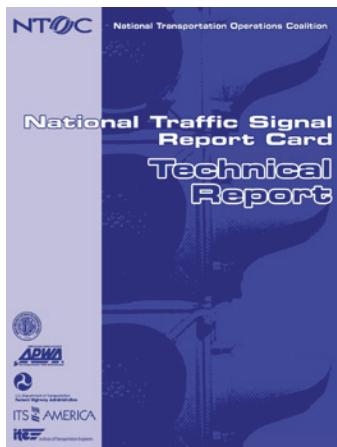


ITE ARCHIVES

ITE staff and attendees at the Annual ITE Meeting and Exhibit in Nashville, TN, USA.

Connected and Automated Vehicles (CAVs)

The advancement of CAV technology was well underway by the turn of the 21st century, and forms of automatic driving vehicles had been in development since the late nineties, including the ParkShuttle in the Netherlands, generally believed to be the world's first driverless vehicle. Starting in 2004, the U.S. Defense Advanced Research Projects Agency (DARPA) held a series of competitions that put driverless vehicles developed by robotics engineers to the test called the DARPA Grand Challenges. The Royal Academy of Engineering claimed in 2009 that driverless trucks could be on Britain's motorways within the decade; that same year, Google had started developing its own autonomous vehicle, but did not announce so publicly until later.



In 2005, ITE led the development of the first National Traffic Signal Report Card through a Federal Highway Administration contract as a member of the National Transportation Operations Coalition (NTOC).



WIKIPEDIA COMMONS/MARUTI TIRK



DARPA

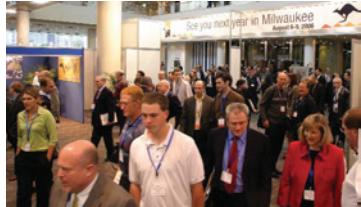
Left: The ParkShuttle in the Netherlands used artificial reference points (magnets) embedded in the road surface to verify its position and is generally believed to be the world's first driverless vehicle. Right: An autonomous vehicle that competed in one of the DARPA Grand Challenges.

Renewable Fuel Standard – August 8, 2005

Congress created the renewable fuel standard (RFS) program to reduce greenhouse gas emissions by incorporating renewable fuels into the nation's transportation fuel supply.

ITE Down Under – August 2005

The first Annual Meeting and Exhibit in Austral-Asia takes place in August 2005 in Melbourne, Victoria, Australia.



New USDOT Headquarters – Spring 2007

The U.S. Department of Transportation (USDOT) moved into a new headquarters on New Jersey Avenue SE in Washington, DC, USA. "The massive 2.1 million square-foot complex spans two city blocks, amounting to 11 acres, and is home to the agency's more than 5,000 employees," according to Clark Construction's website.



TIGER Grants – February 17, 2009

Transportation Investment Generating Economic Recovery (TIGER) grants were included in the American Recovery and Reinvestment Act of 2009, and were designed to incentivize development to better environmental problems and reduce U.S. dependence on energy. Grants issued by the Department of Transportation focus on surface transportation projects. [itej](#)

ITE Presidents – 2000s



Robert M. Rodgers, 2000



John R. Freeman Jr., 2003

"Worked to bring planners and engineers together to serve the public."

— Steven B. Gayle



Steven B. Gayle, 2001



Steven D. Hofener, 2004

"It's not how much you say, it's what you say."

— Steven Hofener



Jenny L. Grote, 2002



Timothy P. Harpst, 2005
Started joint Executive Committee meetings at District Annual Meetings

"The organization of choice for all transportation professionals."

— Jenny L. Grote

ITE Presidents – 2000s

"ITE's 75th anniversary Annual Meeting in Melbourne, Australia truly solidified ITE as a worldwide organization."

—Timothy P. Harpst



Richard T. Romer, 2006



Alfred Guebert, 2008
Started the International Decade of Action for Road Safety

"Bringing ITE to you."

—Earl E. Newman



Earl E. Newman, 2007
Established ITE as a community of transportation professionals



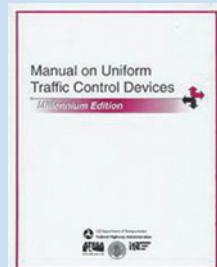
Kenneth H. Voigt, 2009
Established the International ITE Student Traffic Bowl

"A year of change from Institute leadership to the dynamics of our profession."

—John R. Freeman Jr.

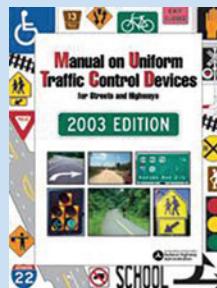
Traffic Signs and Signals

The 2000s saw three different editions of the *Manual on Uniform Traffic Control Devices* (MUTCD)—in 2000, 2003, and 2009. Several updates and revisions were made between all three editions.² The following are some significant highlights of each version:



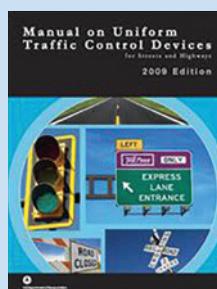
2000 MUTCD

Millennium edition
Reformatted/rewritten
First web edition



2003 MUTCD

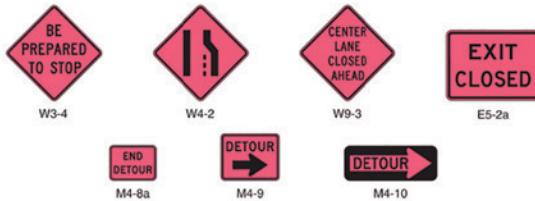
New sign color: Pink for incident management
Countdown pedestrian signals
Metric sign changes



2009 MUTCD (Current edition with revisions incorporated in 2012)

Uniformity
Complete street concept:
all road users
Aging population
Innovation

Figure 6I-1. Examples of Traffic Incident Management Area Signs



Incident management signs were included in the 2003 edition of the MUTCD.

MUTCD

1) The history of transportation in the United States was compiled with assistance from the U.S. Department of Transportation's "History of Transportation" webpage, <https://www.transportation.gov/50/timeline>. 2) Information on the history of the MUTCD was gathered from *ITE Journal* articles written by H. Gene Hawkins, Ph.D., P.E. (F) between 1991–1994. He maintains a website on the history of the MUTCD. For more information visit <https://ceprofs.civil.tamu.edu/ghawkins/MUTCD-History.htm>.



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Transportation's Role in Rural Communities: Valuing the Past, Planning For The Future

BY STEVEN GAYLE, PTP (F)

It is October 1930, when a gathering of nineteen men at the William Penn Hotel in Pittsburgh, PA, USA took the first steps toward the founding of the Institute of Traffic Engineers. The city was a busy place filled with cars and trucks. Just four blocks from the hotel, the Boulevard of the Allies, touted as the most expensive roadway in the world at the time, was gridlocked during peak periods (Figure 1).





Figure 1. Boulevard of the Allies, 1930.

Rural Pennsylvania was a very different story. In 1930, nearly 44 percent of the 137 million Americans lived in rural areas, just over half of those on farms. Farm-to-market transportation was often difficult as dirt roads were still commonplace. Deep ruts and mud could make them virtually impassable for both horse-drawn wagons and trucks used by farmers to bring their goods to the city. Pennsylvania Governor Gifford Pinchot made it a priority to "get the farmers out of the mud" and led the groundbreaking for the first Pinchot Road in York County, PA in July 1931 (Figure 2). This project was made possible by the rural road improvement program of the Pennsylvania Department of Highways Act. These roads were paved with bituminous asphalt over stone.

U.S. government agencies have different definitions of "rural." The Census Bureau defines it as any place outside an urban cluster of 2,500 or more people. FHWA uses a similar definition, but with a population of 5,000 or more. Regardless of the definition of what constitutes rural, these places vary widely from one another. A small New England village is different from a farm town in Kansas. A 5,000-acre ranch in Wyoming is nothing like a vineyard in the Finger Lakes of New York or a fishing town in Louisiana. One thing they all have in common is the important role that transportation plays.

Looking Back

Many rural towns grew up along the railroads, which they relied on for commerce and intercity travel. But by 1930, the automobile had become commonplace. As more rural residents acquired cars, traveling to town to conduct business or for leisure activities became easier than when they had to rely on horses. The horse and buggy trip may have taken at least a half day that the farmer would be hard pressed to spare from his farm work. The truck could carry more than a wagon, permitting the farmer to become more efficient in moving his products, sometimes accessing more distant markets.



Figure 2. Pinchot Road Historic Marker in York County, PA, USA.

The farm itself was becoming mechanized, with tractors replacing horse drawn implements.

Main Street was both the commercial and social center of the small town. There was the bank on the corner, often with a stately clock that underscored the importance and stability of the institution. Dry goods and food stores, restaurants, and perhaps a hotel. By 1930, the street was paved wide enough for on-street parking, and with sidewalks (Figure 3). Some towns were described as sleepy, others as bustling. In either case, most of the traffic was local.

That began to change as people travelled further for both business and leisure. Rural places became places to stop on a trip, with gasoline stations, motor lodges, and diners. Commerce changed too, with more freight being moved by truck. The Motor Carrier Act passed by Congress in 1935 recognized the role trucking played in the nation's economy. It created the Interstate



Figure 3. Main Street, Deland, FL, USA.

Rural U.S. Population: 1950–Now

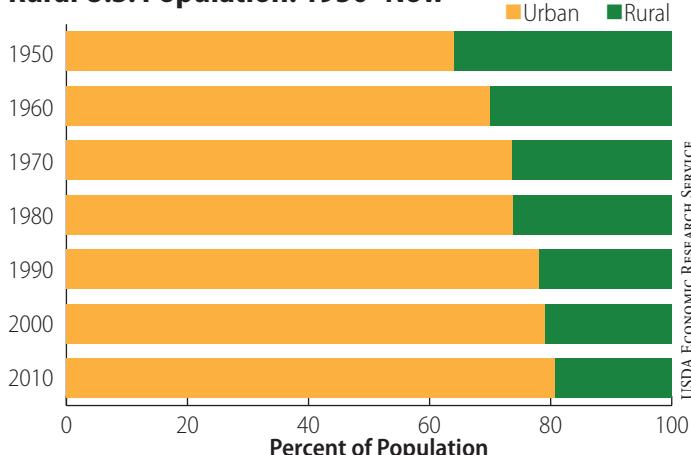


Figure 4. U.S. rural vs. urban population since 1950.

Commerce Commission to regulate the industry. Highways were improved even during the Great Depression as road projects were seen as a means of providing jobs for the unemployed. A network of two-lane highways, usually identified by a US Route number, provided interstate access across the country. Some of these had great transportation history attached: the National Road became US 40, and the Lincoln Highway became US 30.

While many associate e-commerce with the 21st century phenomenon of ordering consumer goods online for home delivery, this model really began more than 100 years earlier. Rural residents would look forward to the arrival of mail order catalogs from Sears, Roebuck, and Co., and Montgomery-Ward. Orders were sent by mail, and packages arrived by U.S. Parcel Post. You could even order a home from Sears, with all of the materials delivered by rail to the closest depot. The company sold more than 70,000 home kits between 1908 and 1940.¹

Fatality Rates per 100 Million Vehicle Miles Traveled, by Year and Land Use, 2008–2017

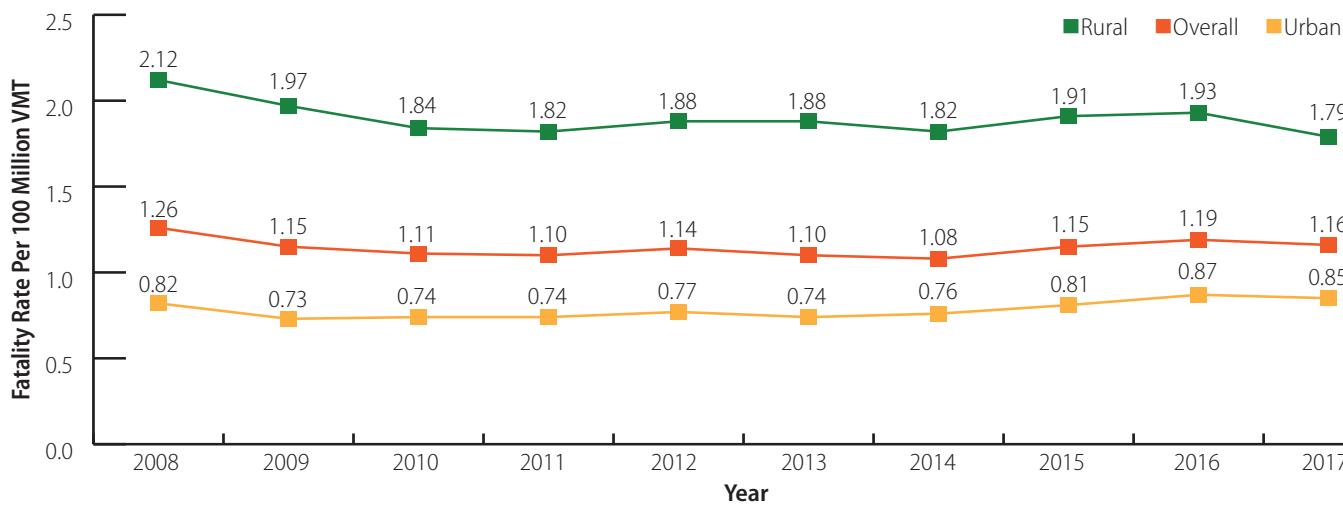


Figure 5. Rural versus urban crash fatality rates, 2008–2017.

Moving Toward the Present

As America prospered after World War II, the automobile became an accepted part of our culture. People expected safe and convenient travel whether on a short trip to the store or a cross-country adventure. That often had an impact on small towns, as Main Street became a state highway. While at first that contributed to the sense of importance of the place, there was inevitable growth in through traffic including trucks. Civic leaders who hoped to restore the quieter character of Main Street often asked their state transportation agency to build a bypass. When that happened, the bypass not only served through traffic, but attracted businesses as well. Stores in the center of town closed or moved out to a shopping center on the bypass route.

People were not staying in rural areas. On a near straight line trend (Figure 4), the 2010 U.S. Census shows that the U.S. rural population had shrunk to 19 percent, although the absolute number of rural residents has grown to more than 58 million. But of those, fewer than 3 million people live on farms. Farms were becoming larger and more mechanized.

According to the Federal Highway Administration (FHWA), 71 percent of the nation's roads by centerline miles are in rural areas, spanning functional classes from principal arterials to local roads.² Surprisingly, 45 percent of rural roads remain unpaved. Perhaps we still have not "gotten the farmer out of the mud," but modern vehicles are better able to cope with road conditions.

Rural road safety is a great concern. According to the National Highway Traffic Safety Administration (NHTSA), in 2016 crashes in rural areas accounted for 50 percent of fatalities.³ As shown in Figure 5, the rural fatality rate has remained about 2.5 times higher than in urban areas. This is despite the fact that Interstate highways have the lowest fatality rate. This is a reminder that Vision Zero must not have an entirely urban focus.



Figure 6. Complete Street elements on a small town Main Street.

Moving Toward the Future

What role will transportation play in the future of rural America? How will the diverse locations that we call rural fare in terms of factors ranging from population to technology?

Consider the key sectors of rural economies: agriculture, resource extraction, energy, manufacturing, and recreational tourism. Agriculture has become more concentrated in fewer larger farms in many parts of the country. At the same time, farm owners are getting older, averaging 57.5 years.⁴ Nonmetropolitan employment has never fully recovered from the Great Recession. “By the second quarter of 2019, non-metro employment remained more than 1 percent below the pre-recession level, while metro employment exceeded the pre-recession level by more than 9 percent.”⁵ Personal income has declined, especially in rural counties dependent on agriculture and mining.⁵ Recreational tourism has been a bright spot in rural economies until the COVID-19 pandemic, leaving future outcomes uncertain.

Despite these concerns, many rural communities have been looking to regain the character of their Main Streets. Applying complete streets design elements to reduce through lanes and slow traffic, and providing bicycle lanes and on-street parking creates an opportunity for human scale interaction that can support small businesses (Figure 6).

When viewed through the lens of emerging technology, options for personal mobility in rural regions are limited when compared to metropolitan areas. Trip length and low population density are

both contributing factors. Private sector service providers, whether transportation network companies (TNC) or micromobility operators, require numerous customers to be successful. Rural residents may find using a TNC to be impractical, even if the service is available. Wait time is long because there are few drivers, and trip cost is high.

Access to cellular communications and the internet is the foundation for TNCs, bike and scooter share, and the future of connected vehicles (CV) and automated vehicles (AVs). The Federal Communications Commission found that internet service was available by fixed technology (cable, fiber optic) to only 73.6 percent of rural households.⁶ Similarly, there are large areas that lack cell phone coverage. The Rural Utilities Service, an agency of the U.S. Department of Agriculture, oversees the Rural Broadband Program.⁷ The intent is to make high speed internet available to rural residents and businesses through grants and loans. This in many ways mirrors the Rural Electrification Act of 1936 that brought electric service to unserved rural areas.

There are freight mobility applications that favor rural areas. Rural interstate highways are ideal for truck platooning supported by CV technology (Figure 7). As it is being currently tested, each truck in the platoon has a driver, making fuel savings the primary benefit. But the future may have a driver only in the lead truck followed by AV trucks. AV trucks are now being tested for rural portions of long haul trips. Drivers would be used for the first/final segments.



Figure 7. Truck platooning concept.

E-commerce brings another opportunity for rural application. The United Parcel Service (UPS) is testing a truck mounted drone for rural delivery.⁸ The forward portion of the roof of a standard delivery truck slides back, revealing a drone launch area. The parcel basket is accessible to the driver. An air delivery can be made to a customer who has agreed to the service while the driver makes an in-person delivery and may proceed to the next stop. Rural areas do not have the airspace conflicts that may hamper urban drone delivery, but do have long route distances, creating an opportunity to improve the productivity of the driver.

The future of AVs may have interesting linkages with rural areas, bringing both benefits and challenges. AVs can provide mobility for those who cannot drive. According to a national rural health magazine, "Over 10,000 Americans turn 65 years old each day, and 1 in 4 of these seniors live in rural areas and small towns. Along with the many challenges that come with growing older, social isolation is a public health issue, particularly among rural-dwelling seniors."⁹ An AV could be used to provide transport for a medical appointment or shopping trip.

If AVs become commonplace, there could be a significant impact on rural road safety. NHTSA research ascribes the critical reason for 94 percent of crashes to driver behavior.¹⁰ While AVs would not eliminate all human-caused crashes, they would be much safer. While this is likely to be a distant future, it brings promise on the goal of Vision Zero.

Summary

During the 90 years that ITE has existed, both transportation and the nation's rural areas have evolved. There has been a rural-urban divide for a long time, but its character is changing. While the country is much more urban, mechanization has allowed for more efficient production of food and energy resources. Reliance on

motor vehicles for the mobility of people and goods has changed less. Both are subject to the benefits of automation. Bringing the benefits to rural areas will depend on the universal provision of high-speed broadband.

Public policy created transportation programs that got the farmers out of the mud. Public policy created programs that electrified rural America. Public policy is in place, but not yet fulfilled to bring our rural regions up-to-date communications and open the way for advanced transportation technology and services. **itej**

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Steven Gayle, PTP (F) is a director with RSG. Steve is a past ITE International President and International Director, and Past Northeastern District chair. He served in 2017 as chair of the ITE Strategic Initiative Committee, leading the development of the new ITE Strategic Plan. He is currently serving on the ITE Transportation Reauthorization Task Force and the Strategic Plan Update Committee. He served as vice-chair of the Transportation Professional Certification Board, where he was the co-creator of the Professional Transportation Planner (PTP) certification. He has a bachelor's degree from the University of Pennsylvania, and a masters in Regional Planning from Syracuse University.



Top Management Skills for Technical Managers – a 10-Part Webinar Series

ITE is proud to partner with Shelley Row, P.E., CSP (F) to provide you with access to this valuable webinar series. When you register, be sure to use the special codes specifically for ITE.

Take advantage of working from home to grow your management skills so that your management competence equals your technical competence. Shelley created this webinar series to include the top 10 skills she had to learn when she became a manager. Because, let's face it, technically skilled professionals don't have the best reputation as managers. It's time to change that.

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An ITE Online Interactive Workshop powered by Shelley Row, P.E., CSP (F)

Shelley Row and ITE have updated this series' sessions to include information that is helpful to communicate with non-technical audiences virtually!

Asking Powerful Questions and Listening to for the Answers that Really Matter

September 17, 3:00–4:00 p.m. ET **1.0 PDH Credits**

Powerful questions get beyond a surface understanding of the people and the project. Skillful questions uncover the "why" behind a project and its importance to the client, citizen or decision-maker. Active listening makes your stakeholder feel heard and validated and can calm a tense situation. Through active listening, discover technical aspects of the project and the non-technical aspects that are tied to feelings that motivate behaviors.

Upcoming Live Webinars

Missed registering for the live event? You can still register and view webinars on-demand within 60 days after the original date.

Liability on Vision Zero Programs and Transportation Professionals

September 1, 2:00–3:30 p.m. ET **1.5 PDH credits**

This webinar will explore the topic of public agency liability for transportation professionals involved in safety and specifically the factors of limiting liability and damages resulting from Vision Zero programs. We will identify how to select Vision Zero focused countermeasures in a way that minimizes possible exposure to liability and damages with attention given to successfully implementing innovative treatments. Presenters will outline what steps to take when a liability concern is raised in association with Vision Zero.

Noteworthy Speed Management Practices

September 3, 2:00–3:30 p.m. ET **1.5 PDH Credits**

FHWA and ITE teamed up to develop a resources for practitioners dealing with speed management. This webinar presents the findings from 8 noteworthy speed management case studies and will provide an opportunity to discuss speed management issues among peers on topics ranging from policy to practical countermeasures.

Working from Home –

COVID-19 Lessons Learned and Success Stories

September 8, 3:00–4:30 p.m. ET **1.5 PDH Credits**

Going into 2020, transportation companies had varying degrees of working from home policies. When COVID-19 hit the nation, many companies across the industry quickly adapted to have employees to work from home full-time. Over the past few months there have been many success stories as well as lessons learned from bumps along the way. This webinar will share perspectives from IT and HR, as well as personal stories of employees who are new to this or have been working from home for decades.

Smart Columbus Program:

Updated Performance Measurement Plan Webinar

September 14, 1:30–3:00 p.m. ET **1.5 PDH Credits**

This webinar will discuss how Columbus, OH, USA created a cohesive and coordinated approach to measuring the performance and impact of both the individual projects and overall program. It will provide an overview of the outcomes and indicators planned for the program and each individual project, as well as the factors impacting the design and execution of each experiment. Finally, a summary of data that will support performance measurement will be discussed.

Rural Speed Safety Project for USDOT Safety Data Initiative: Findings and Outcomes

BY SUBASISH DAS, PH.D. (M) AND SRINIVAS GEEDIPALLY, P.E., PH.D. (M)



SHUTTERSTOCK/SASCHA BURKARD

To save more lives and reduce injuries from roadway crashes, agencies must identify sections of the highways that have an increased risk of crash occurrences. Toward that end, the U.S. Department of Transportation's (USDOT) vision for the Safety Data Initiative (SDI) includes the integration of big data sources as a focus area to enhance the general understanding of crash risks and mitigate future crash occurrences. Current crash estimation or prediction methods, such as those in the first edition of the *Highway Safety Manual* (HSM) use annual average daily traffic (AADT) data along with geometric characteristics to predict the annual average crash frequency of roadway segments and intersections. One inadequacy of the HSM is the limitation of speed-related factors in crash prediction. Recent research has made limited progress in incorporating speed measures (i.e. average daily speed, standard deviation of hourly operating speed) into crash predictive models. To advance the state of the practice, this study begins the work of investigating the association between crash risk and traffic speeds using traffic speed information from big data.

Related Work

Although speed is considered as a major contributing factor of roadway crashes, research findings are inconsistent. Abdel-Aty and Radwan studied speed by capturing the magnitude of speeding relative to the posted speed limit.¹ This speeding indicator variable was shown to affect the crash involvement of male and young drivers. The preliminary analysis of a study conducted by Taylor et al. based in the United Kingdom revealed that the average speed was negatively related to crash frequency.² Pei et al. showed that crash risk is negatively associated with mean speed when controlling for distance exposure, which goes with the argument that roadway segments designed for higher speeds should deliver better road safety performance.³ However, for time exposure, this association was positive. Imprialou et al. showed that speed-crash relation is positive for condition-based approach.⁴ However, the outcome of the link-based model is the opposite. Several other studies examined the similar research questions.⁵⁻¹⁰ However, the overall findings are not similar in nature. Few recent studies investigated the association between weather and crash outcomes.^{11, 12} The literature review reveals that additional research is needed to investigate the association between crash, operating speed, weather, roadway, and traffic measures.

USDOT SDI Pilot Study on Rural Safety

This paper is an abridged version of Das et al. study that developed Safety Performance Functions (SPFs) by using geometric and operational characteristics that include speed measures.^{13, 14} SPFs are the statistical “base” models used to estimate the average crash frequency for a facility type with specific base conditions. The research addressed two research questions: 1) do different speed measures contribute to crash outcomes, and 2) is there more variability in speeds just prior to a crash?

This study developed an interactive decision support tool that provides annual expected number of crashes with colored lines based on the number of crashes per year. The transferable framework of this tool was developed using open source R software and its ‘Shiny’ (an interactive web technology) framework.^{14, 15}

Intended Audience

The main audience for this report is practitioners who want to assess risk on rural roadways. Some analytic methods in the report require transportation safety modeling knowledge and skills. However, the tool is easy to use to perform annual risk analysis by the facility types.

Methodology

Data Sources

The databases used for the conflation are: 1) the National Performance Management Research Dataset (NPMRDS), and 2) the Highway Safety Information Systems (HSIS) data. The project team assigned the weather station data from the National Oceanic and Atmospheric Administration (NOAA) on the conflated database. Figure 1 illustrates the overall approach developed by Das et al.¹³

Data Integration

Given the list of the data sources and the purpose of the data analysis, the project team developed conflated datasets by integrating information from different sources. The data integration work has major three steps:

- Conflate the HSIS roadway network data to NPMRDS directional network
- Determine different speed measures by temporal segregation (for example, annual, month or daily)
- Conflate average precipitation (annual and daily) data (from NOAA) to the NPMRDS network

It is important to note that the speed data on TMC segments are recorded by epoch (5-minute bins in the raw NPMRDS data). The project team averaged the annual, monthly, and daily level. For example, monthly average speed (MAS) for a TMC segment can be calculated as:

$$MAS_{epoch\ e,TMC\ i} = \frac{1}{n} \sum_{n=1}^{31} Speed_{day\ n,epoch\ e,TMC\ i} \quad 1$$

where:

$MAS_{epoch\ e,TMC\ i}$ = the average epoch e speed at segment i over a month
 n = days in a month

$Speed_{day\ n,epoch\ e,TMC\ i}$ = the NPMRDS speed on day n and epoch e at segment i

Model Development

Certain speed measures incorporated into statistical models were found to be beneficial to quantifying safety risk. It includes all rural facility types, and the procedures developed can be applied to other states contributing to HSIS. Readers are referred to Das et al. study for variable details.¹³ The project team developed both long-term (annual-level) and short-term (daily-level) SPF with the inclusion of speed measures and weather information. For both (annual and daily) modeling frameworks, three roadway facilities are considered for separate SPF development:

- Rural two-lane roadways
- Rural multilane roadways (both divided and undivided)
- Rural interstate roadways

Annual-level analysis

The project team developed the following SPF (Washington only, Ohio only, and Two-state model) by major facility types using

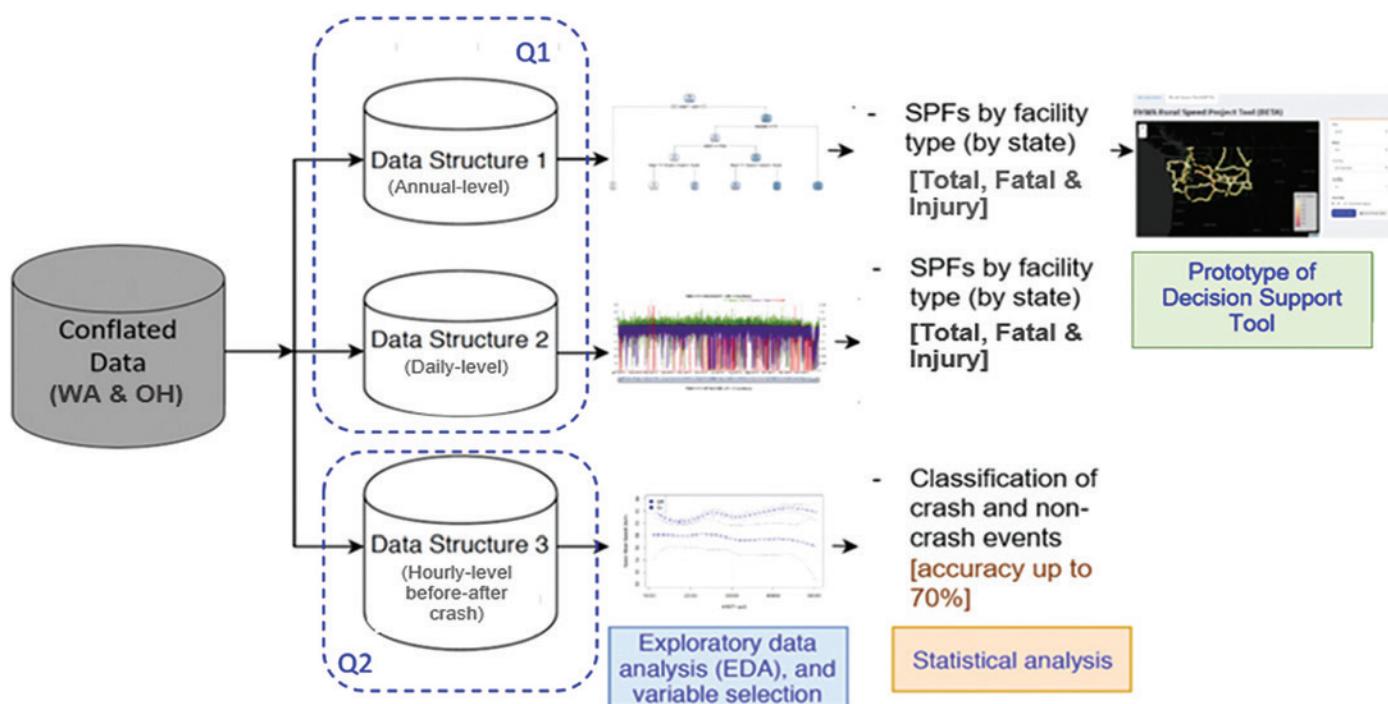


Figure 1. The Framework of "Rural Speed Safety Project."

aggregated annual data for: total (KABCO)* crashes, fatal and injury (KABC) crashes, and property damage only (PDO) crashes.

Certain speed measures were useful for annual crash prediction. It is important to note that the current study did not examine the speed variability between the vehicles as NPMRDS provides aggregated speed measures. Different variable combinations and various model forms were examined to identify the best possible relationship between the number of crashes and independent variables.

Readers can consult Das et al.¹³ report for the detailed modeling techniques. Table 1 shows a summary of the impacts on the crash frequency of the variables examined for the developed models. The key findings from annual level analysis are below:

- Increased variability in hourly operating speed within a day and an increase in monthly operating speeds within a year are both associated with increased crashes.
- Multilane, non-freeway roads with higher free-flow speeds are expected to experience a higher crash frequency than those with lower free-flow speeds. However, crash frequency decreases for interstate roadways, which is due to their more robust highway design standards.
- When operating speed difference between weekends and weekdays is greater, all roadway types experienced a higher number of crashes.

* K= Fatal, A= Incapacitating Injury, B=Non-incapacitating Injury, C=Minor Injury, O= No Injury or Property Damage Only (PDO)

Table 1. Impact of Variable Changes on Annual Crash Frequency.

When	Crash Frequency On		
	Rural Interstate	Rural Two-Lane	Rural Multilane
Traffic volume increases	Increases	Increases	Increases
Segment length increases	Increases	Increases	Increases
Lane width increases	—	Decreases	—
Percentage of horizontal curves increases	Mostly Increases (Decreases in OH model)	Increases	Increases
Intersection is present	—	Increases	Mostly Increases (Decreases in WA KABC model)
Road is undivided	NA	NA	Increases
Percentage of days with precipitation increases	—	Decreases	Decreases
Operating speed difference between weekend and weekday increases	Increases	Increases	Increases
Average hourly operating speed variability within a day increases	—	Increases	Mostly Increases (Decreases in WA KABCO model)
Operating speed variability by month within a year increases	—	Increases (OH PDO model only)	Increases
Average hourly non-peak non-event operating speed increases (free flow) increases	Decreases		Increases
Average hourly speed increases	—	—	—

Note: at 95 percent confidence level: Increases (crash frequency goes up), Decreases (crash frequency goes down), -(not significant), NA= not applicable.

- Increased non-peak and non-event speed (average operating speed excluding peak hours and hours with events) is associated with an increase in crash frequencies on rural two-lane roadways. However, the opposite is true for the rural interstate model. This finding for decreased crash frequency on the interstate could be because of high design standards.
- Findings from precipitation-crash association is counter intuitive. Further investigation is needed to examine this finding by including other variables such as pavement condition, water on roadway, and skid number.

Daily-level analysis

Prediction based on annual information limits the SPFs' ability to quantify the effects of variables such as operating speeds, operating speed variance, or seasonal differences that fluctuate more often than year-to-year. Agencies require the ability to accurately assess what seasonal or daily changes could affect crash outcomes. To address this, the study developed statistical models for the segment daily level based on crash severity and roadway type. The Poisson-Tweedie statistical model is applied in the analysis due to the infrequent nature of crashes that requires zero inflation.^{**} The project team used the Poisson distribution with rate λ to select a number n independent, and the identically distributed variables

** TMCs with zero annual crashes are also included in the model

were then summed to generate a sample of the compound Poisson distribution. In the Tweedie case, these variables come from the gamma distribution with shape parameter α and scale parameter β .

Table 2 lists the variable changes and affects for the developed models. The general findings from daily level analysis are below:

- In all models, a segment with high variation in daily average speeds is expected to experience a higher number of crashes than a segment with a lower variation in daily speeds. ***The strength of this finding is one of the biggest insights gained from this study.***
- Average operating speed increases were associated with increased crashes for rural two-lane roadways. However, average operating speed increases were associated with decreased crashes in the Interstate models. This finding could be because high design standards for interstate highways.
- As the daily average precipitation increases, so do the number of daily crashes.

In addition, the project team developed another dataset (Data Structure 3 as shown in Figure 1) to examine speed variation before a crash event compared to a non-crash traffic flow condition.

Examination on a randomly selected sample dataset (with 150 crashes from Washington interstate roadways) shows that speed variability increased for the series just prior to a crash, which was also different from the comparison no crash series.

Decision Support Tool

The tool (RuralSpeedSafetyX) is hosted as a shinyapps.io webpage.¹⁶ The tool has a dashboard with different dropdown menus to assess annual risk scoring (in terms of crashes by different injury levels) at the directional segment level. There are several flexible options to generate heatmaps at different levels (see Figure 2a for the interface and Figure 2b-e for different drop-down options). The outcomes of this tool will

Table 2. Impact of Variable Changes on Daily Crash Frequency

When	Crash Frequency On		
	Rural Interstate	Rural Two-Lane	Rural Multilane
Traffic volume increases	Increases	Increases	Increases
Segment length increases	Increases	Increases	Increases
Number of lanes increases	Decreases(OH KABC model only)	NA	—
Lane width increases	Increases (OH KABC model only)	Decreases (WA model only)	Increases (WA model only)
Number of curvatures increases	Decreases (OH KABC model only)	Decreases (WA KABC model only)	Increases (OH model only)
Total length of curvatures increases	—	Increases (WA KABC model only)	—
Percentage of days with precipitation increases	Increases	Increases	—
Variability of daily average speed increases	Increases	Increases	Increases
Daily average speed increases	Decreases	Increases	—

Note: at 95 percent confidence level: Increases (crash frequency increases), Decreases (crash frequency increases), —(not significant), NA= not applicable.

provide estimates of expected annual crashes (total and fatal/injury) at different geographic scales, such as state, county, and facility type. The estimates are graphically displayed in a color-coded heatmap format. This tool also allows to download the final queried data in comma separated value (CSV) format. Readers can consult Das et al. study for the framework and source codes developed for this tool.¹⁷

Conclusions

This study examined the prevailing operating speeds and weather data on a large scale and quantified how traffic speed and weather condition interact with roadway characteristics to affect the likelihood of crashes. The inclusion of speed information expanded upon the existing state of practice by incorporating exposure data as risk variables. This study has three unique contributions:

- Developed the data conflation framework using HSIS, NPMRDS, and NOAA.
- Quantified the targeted relationship between crashes and influential variables by developing best-fit models that address the impact of operating speed and weather to measure safety risk alongside traditional highway safety variables.
- Developed a scalable, flexible, and transferable decision support tool that can be reproduced by using newer datasets.

It is important to note that this study is a starting point in evaluating the effect of operating speed on crash outcomes. It is recommended that other states can use the current framework and develop similar SPFs with inclusion of speed and weather data. This study is not without limitations. First, this research used roadway segments based on TMC segment lengths, which are sometimes very long. Further examination of the effects of segment length would improve modelling reliability. Second, missing values in the NPMRDS travel time data are higher in lower functional classes. More robust NPMRDS data with fewer missing values would provide more insightful knowledge on how operating speeds

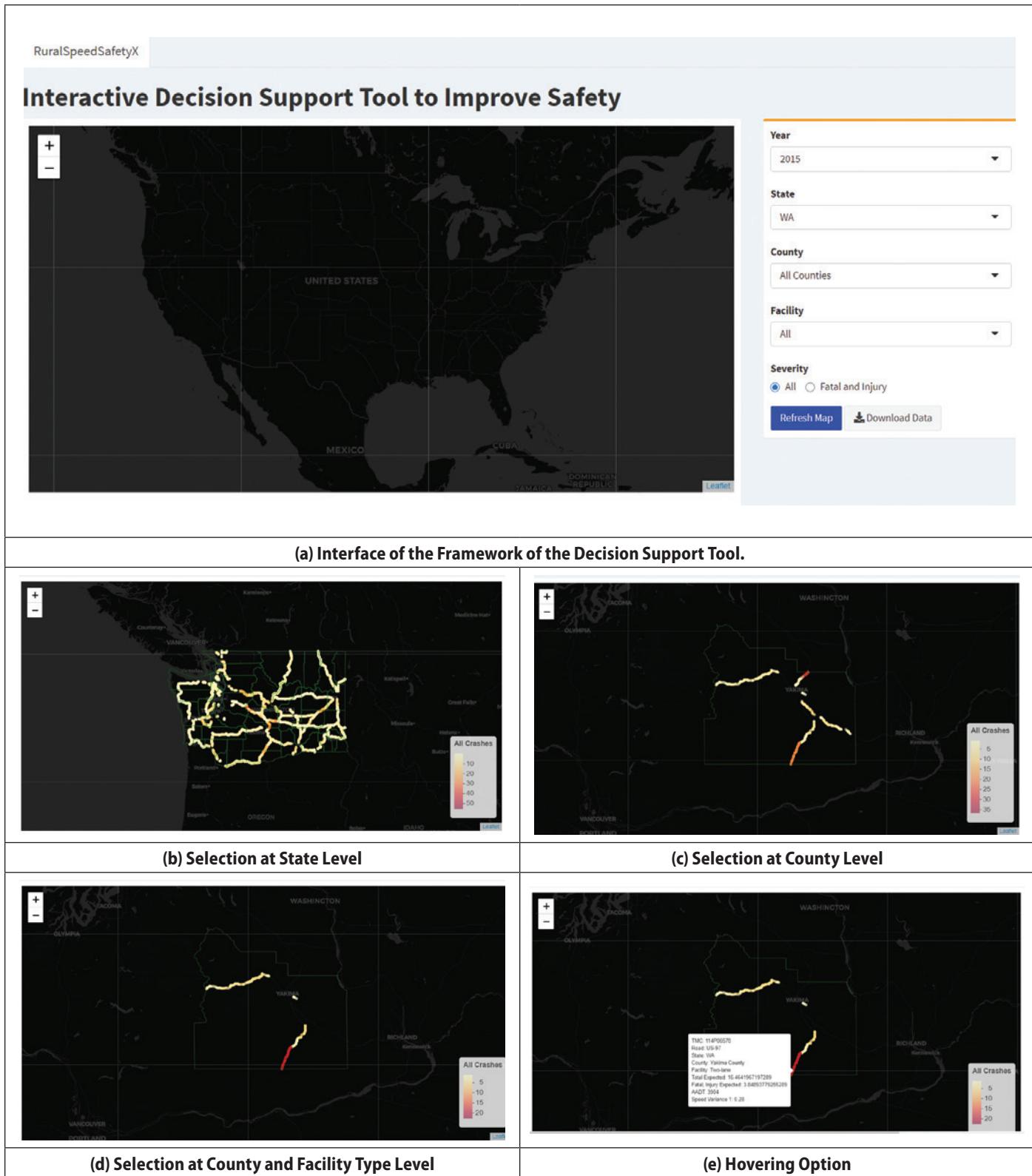


Figure 2. Interface and Selection Options in the Interactive Tool.

affect crashes. Third, the current study used a limited number of variables. Subsequent study may examine some limitations found in this study, particularly some missing data in the current version of NPMRDS and zero inflation in short-term crash prediction, to see if those limitations can be overcome by revised versions of the data and more robust modeling techniques. **itej**

Acknowledgements

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Resources Available

The project team developed a weblink^{**} that includes descriptive statistics and data visualization tools (both static and interactive). The team members also developed an interactive decision support tool^{****} to show segment level risk scoring.

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** http://subasish.github.io/pages/FHWA_Rural_Speed_T4_1/

**** https://ruralspeedsafety.shinyapps.io/rss_sdi/

The Transportation Safety Pandemic

By Meghan Mitman, AICP (M), Principal, Fehr & Peers; Rachel Carpenter, P.E. (M), Chief Safety Officer, Caltrans; and Offer Grembek, Ph.D., Co-Director, UC Berkeley SafeTREC

In the last 90 days, we have all learned the core vocabulary of a pandemic. In particular, “flattening the curve” and “we’re all in this together,” are now everyday phrases. We have acknowledged the need for both individual responsibility and system changes. We have seen how not all communities have been affected the same, with disproportionate impacts to persons of color and lower incomes. And we have focused on those most vulnerable among us—giving them special attention and valuing their lives.

And yet for decades, we have been living amid another public health crisis, another pandemic: serious injuries and fatalities resulting from transportation crashes. Roadway crashes are the eighth leading cause of death globally, and the leading cause of death among young people ages 15–29 years. So how can we apply the critical lessons we are learning from COVID-19 to change our thinking and approach to transportation safety?

A few parallels to consider.

When we think of prevention:

- For COVID – that means improving personal hygiene. For transportation safety, that means changing road user behavior (for example, limiting speeding and DUIs)
- For COVID – that means social distancing. For transportation safety, that means changing road design and operations (for example, separated bikeways)
- For COVID – that means contact tracing. For transportation safety, that means vehicle warning systems (for example, lane departure warning)
- For COVID – that means masks. For transportation safety, that means changing vehicle design (for example, automated braking systems)

When we think of treatment:

- For COVID – that means medication. For transportation safety, that means improving crashworthiness (for example, airbags)
- For COVID – that means adequate capacity in ICUs/Hospitals. For transportation safety, this is the same for post-crash care.

And when we think of our ultimate goal:

- For COVID – that means a vaccine and eradication. For transportation safety, that means the Safe System approach and Vision Zero.

The good news is we already have the vaccine for the transportation safety pandemic. We just must choose to use it.

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Reinventing TIA: Contemporary Approaches to Addressing the Traffic Impacts of Urban Development

By NOREEN C. McDONALD AND TABITHA S. COMBS

Communities across the United States use Traffic Impact Assessment (TIA) to align road infrastructure with mobility demands of new development. The practice emerged in the 1970s as a tool for local governments to negotiate the financial costs of providing road improvements with developers during the development approval process.¹ ITE has been instrumental in the professionalization and standardization of TIA practices through publication of trip generation guides and TIA manuals.



SHUTTERSTOCK/ZHAO JIANGANG

While TIA is a widespread and generally accepted tool for ensuring transportation infrastructure keeps pace with land development, practitioners, researchers, and advocates have raised concerns about the accuracy and unintended consequences of TIA as conventionally employed. Methodological concerns focus on whether the TIA process overpredicts future roadway traffic due to a lack of systematic consideration of land use context, presence of alternative modes, and shifting of traffic from previous destinations.²⁻⁵ Incorrect vehicle trip generation estimates could lead to unneeded infrastructure improvements and negatively affect other modes. For example, adding left-turn lanes at an intersection could make it harder to cross the street by foot.

Other critiques of TIA have centered on how well the process aligns with efforts to address the affordable housing crisis through increased production, as developers of new residential properties pass the cost of roadway expansions on to consumers. TIA may also interfere with Vision Zero initiatives to eliminate roadway fatalities, given the absence of safety as an explicit consideration in most communities' TIA processes. Finally, there are concerns about the way TIA prioritizes mitigation of motor vehicle congestion. By applying rigid congestion-based metrics to the results of precisely specified analyses, reliance on TIA results in a "what gets measured is what matters" approach to public decision making and imposes a "cars first" norm on land use and transportation planning.⁶

The Institute of Transportation Engineers (ITE), the U.S. Environmental Protection Agency (EPA), and agencies have been leading efforts to address these concerns. California, USA has changed its environmental review requirements to focus on generation of vehicle miles of travel rather than generation of trips.⁷ The EPA and ITE have provided guidance on how to better address the land use and develop multimodal trip generation estimates.^{8,9} The *Highway Capacity Manual* incorporated multimodal level of service (LOS) to recognize the importance of LOS tradeoffs across modes.^{10,11} Some jurisdictions, such as the District of Columbia, USA have developed databases to better predict trip generation impacts locally.¹² These efforts address methodological concerns behind TIA. However, they are often limited to geographic areas where state departments of transportation are supporting development of new tools, or to communities with the financial capacity to hire consultants to implement new approaches to collecting, modelling, and interpreting trip generation data. To date, there is no evidence of widespread adoption of any of these approaches, outside of a handful of examples.

Yet innovation in TIA practices is occurring. In this article, we draw from a research effort to document current TIA practices among local governments in the United States, and to identify and describe the strategies that are being used to address growing concerns over the conventional approach to TIA.¹³ We interviewed transportation engineers and planners involved in the development

review process in 36 U.S. cities and counties in North Carolina, Virginia, and Maryland to understand whether, how, and why they are changing their TIA practices. Here we describe a sample of the practice changes we found, and the contexts in which we found them. Our intent is to illustrate the range of alternative approaches to TIA communities are adopting, as a starting point for transportation professionals looking to improve the TIA process in their communities. For readers looking for a more comprehensive analysis of evolving TIA practices, we have published a lengthier paper elsewhere, freely available at <https://doi.org/10.1177/0739456X20908928>.

A Wide Range of Adaptations in Local TIA Practices

Through content analysis of transcripts of more than 19 hours of interviews, we found that communities—ranging from major metropolitan areas to college towns to sparsely populated rural counties—were employing a rich and diverse set of practices with wide variation in scale and scope. Communities are modifying their approach to TIA at all stages of the development review process, including changes to when and where TIA is required, tweaks to the TIA process, adjustments in how results are interpreted, and changes to mitigation criteria required to receive project approval. The changes taking place also vary widely in terms of cost and difficulty of implementation, from "low hanging fruit" changes likely to be within the capacity of most communities, to technically, financial, and/or politically challenging changes accessible to a constrained set.

Low Hanging Fruit

Across our entire sample, and especially in smaller cities and cities outside major metropolitan areas, we documented relatively simple changes that require little to no additional staff time, technical capacity, or political involvement. They do not require changes to the mechanics of TIA. Instead, they focus on changes to when and where TIA is applied, what sorts of mitigations can be exacted from applicants, and how to achieve public development goals beyond the limits of TIA. Changes such as these may already be enabled through existing ordinances or plans, though in some cases may require approval by elected representatives. Examples include:

Exempt development proposals from the TIA process based on location, land use, project size, or parcel history. Exemptions are the most commonly used alternative strategy in our study. They are useful when communities want to encourage development in particular areas, or when the community has longer term plans for managing increased travel demand (such as new transit lines). For example, one city designated zones for higher intensity development and eliminated TIA requirements entirely for projects proposed within those zones. Several other cities have done away with TIAs for redevelopment of existing parcels, regardless of land use, as a means to encourage conversion of low productivity or abandoned

downtown properties. In both examples, conventional TIAs are required where not explicitly exempted.

Allow or require developers to pay impact fees into a public infrastructure improvement funds instead of mitigating impacts themselves through capacity improvements. Where allowed by law, impact fees afford local government more control over infrastructure improvements and enables corridor-based improvements rather than site-based improvements. This approach is useful along regionally important corridors with small or piecemeal development.

Require accommodations outside the TIA process for non-car travel modes as precondition for development approval. When projects are expected to either generate non-car trips or negatively affect safety or convenience for non-car travelers, but modeling those impacts is beyond the community's capacity, extra-TIA non-car accommodations is a common approach. These requirements are typically negotiated informally during the development review process or stipulated by ordinance.

Technically Simple but Politically or Financially Demanding

Many communities are also pursuing changes that, while not necessarily technically challenging, do require higher levels of political support (potentially including adoption of new plans or ordinances) and/or staff resources. Similar to low hanging fruit, these sorts of changes generally leave the *process* of TIA alone, but change the way the city responds (or asks the applicant to respond) to the *results* of the TIA. In our sample, public interest was often a driving force behind these sorts of changes. Technically simple but politically or financially demanding changes we observed include:

Limit allowable traffic mitigation strategies. A handful of communities in our study have pre-determined which sorts of congestion mitigation strategies would be allowed in certain areas, and only approve development proposals whose projected traffic impacts that can be satisfactorily mitigated by those strategies. For example, prescriptive roadway guidelines, adopted via ordinance or comprehensive plan, establish exactly what improvements are required or allowed along specified corridors, forcing developers to propose projects that fit within those guidelines.

Encourage creative mitigation strategies. Where conventional roadway capacity expansions conflict with other local objectives, communities have allowed or encouraged development applicants to propose creative mitigation strategies that offset projected traffic impacts through alternative improvements (e.g., TDM programs). These strategies are often negotiated with the developer during the permit approval process but require a high level of political support and acceptance of the alternative approaches.

Re-scale ITE's trip generation estimates by a pre-determined factor to account for greater expected rates of non-car travel. One community in our study—a mid-size city with a robust transit

system serving a large population of college students—reduces trip generation estimates by 10 percent in transit-served areas. The success of such approaches is contingent on continued support for non-car travel modes, which may be politically charged in some communities.

Adjust allowable levels of congestion or delay. This approach works best in places where alternative travel modes are available or where capacity expansions required to prevent an increase in congestion or motorist delay LOS would have negative impacts on safety or convenience for other travel modes. While simple in concept, this change is potentially politically challenging in that it explicitly allows for increases in congestion, which is a stated barrier to enacting change in many communities we studied.

Challenging but Impactful

A minority of communities in our sample have also experimented with more process-oriented changes that are potentially highly impactful, but politically and technically challenging. Communities pursuing such changes tend to be relatively dense, are experiencing heavy development pressures, have higher non-car mode shares, and have strong political support for changing TIA practices. Changes in these communities are nearly always driven by staff, supported by elected officials, and informed through professional development activities: these sorts of process-oriented changes require knowledgeable, committed staff and elected leadership. Challenging but impactful process-oriented changes we observed include:

Change data or models to reduce overprediction. Some communities in our study are substituting ITE's trip generation estimates with context-sensitive estimates based on locally collected data; a few have pushed further by developing in-house models calibrated to local context and expected impacts. These strategies can help correct "over-prediction" challenges associated with the conventional TIA approach in dense areas with heavy use of non-car travel modes. They are costly, however, as they require a robust, on-going system for collecting travel data and monitoring impacts of new developments over time, as well as the capacity to develop and implement complex traffic models.

Shift the focus away from motor vehicle congestion. A couple of communities in our study are working to shift the focus away from motor vehicle congestion by a) changing outcome of interest in TIA from motor vehicle trips to person trips or all trips (including by non-car modes) and b) replacing LOS with other metrics, such as multimodal LOS (MMLOS), vehicle miles generated, or overall network delay. These approaches allow for a more system-wide assessment of potential travel impacts, reducing the possibility that vehicle congestion-focused mitigations will have negative consequences for other modes. They may also encourage more compact, multimodal-supportive development patterns by enabling applicants to capitalize on supports for non-car travel modes and reducing permit costs for infill parcels relative to suburban and greenfield parcels.

What Impedes Change?

Across the whole sample, the most common impediments to broader practice change, regardless of the types of changes communities were pursuing were a lack of knowledge, tools, and technical capacity, followed closely by concerns by the public and elected officials that changes to the standard practice would not result in desired multimodal outcomes and/or would exacerbate existing congestion problems.

This finding points to a critical research need for the planning and engineering communities to develop and disseminate more accessible, evidence-based techniques for estimating and communicating system-wide impacts of land development in contemporary urban contexts. To date, data are unavailable on the efficacy and impacts of the alternative TIA practices defined here, particularly with respect to congestion management, safer streets, supports for non-car modes, or contributions to economic vitality. Given the importance of public and political support in changing practices, demonstrations of potential impacts of new practices is critical.

Conclusion

TIA is built on the philosophy that burdens placed on transportation systems by land development should be mitigated by those generating that burden. While this philosophy has wide acceptance in local governments across the United States, thinking is evolving regarding where, how, and even whether traffic impacts of new developments ought to be evaluated and accommodated. There was a strong sense across the 36 cities and counties we studied that the conventional approach to TIA imposes interpretations of “impacts” and “mitigations” that are inconsistent with current societal norms and values. However, absent realistic actionable guidance on alternative practices for ensuring transportation infrastructure keeps pace with development, TIA remains the dominant approach. This article shared examples of how some places are working to modify their TIA practices. In doing so, we hope to empower transportation professionals to explore the potential for alternative approaches in their own jurisdictions, and to encourage rigorous evaluation of alternative practices by the research community. [itej](#)

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