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Radar* $20K - $30K
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The ITS Plus 7th Generation Lightning Series of Vehicle Detection products provides the best performance at the best price. The multi-patented design can detect vehicles even in complete white out or glare conditions (like thermal) while simultaneously providing Advanced Detection to 1,000 ft and Vehicle Counts (like radar) and Ethernet at a fraction of the price. Only ITS Plus offers Optical Mask Technology (OMT) and a Dual Algorithm based detection. Clever software replaces expensive hardware to achieve the most cost effective and highest performance vehicle detection system on the market. **Find out why everyone is talking about ITS Plus.**

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Traffic signal analysis and optimization workflows with PTV Vistro.

Have you experienced PTV Vistro’s efficient traffic signal analysis workflows and optimization? Take our modern interface for a test drive! PTV Vistro specifically solves the daily tasks of traffic operation engineers. Powerful features like our signal groups editor, built-in leading pedestrian intervals, flashing don’t-walk estimation, and automatic local optimization toggle provides an unparalleled workflow.

Next, our versatile tool kit allows for the fast construction of default NEMA or custom controller sequences for both simple and complex intersections. Colorful phase diagrams display both your vehicle and pedestrian split times with interactive slider controls. Also, route-based time-space diagrams display the efficiency of network optimization. Furthermore, built-in Vissim export and animation preview tools confirm setup details and operations.

Remarkably, sharing a signal controller at multiple intersections is easy— and is not a cluttered cluster. PTV Vistro shows the entire sequence, phase diagram, and indicates locally used phases at each intersection. Notably, this makes for an intuitive setup of tight-diamond interchange terminals or signalized offset intersections.

PTV Vistro’s integrated scenario manager effortlessly examines modifications to traffic signal timings and creates your peak-period timing plans. Moreover, one-click duplication of scenarios enables on-the-fly experimentation of traffic signal timing and coordination. This keeps your current timings untouched and combines all of your tests in one managed file.

Importantly, PTV Vistro implements the Highway Capacity Manual (HCM) 6th Edition, 2010 and 2000 methods. Detailed calculation parameters are customizable to analyze site-specific impacts to LOS and MOEs. Also, PTV Vistro integrates the Canadian Capacity Guide method. This provides a practical experience-based evaluation of traffic signal operations in Canada. For planning-level calculations, PTV Vistro includes the Intersection Capacity Utilization method.

Scan the QR code above to read our in-depth knowledge-base article and learn more about PTV Vistro’s traffic signal analysis capabilities.
president’s message

Who Will Survive in Mobility?

It seems only yesterday we were debating definitions of mobility as a service (MaaS) and mobility on demand (MOD). Now, with the unusual circumstances we find ourselves in, the very survival of these emerging concepts is being questioned. Just to recap—MOD is a future with transportation as a commodity, and MaaS is aggregation of mobility using subscription services (both use smartphones and expanded mobility choices—including various emerging modes, e-scooters, e-bikes, Uber/Lyft, etc.). At the risk of being wrong like every other prognosticator or narrative-driven writer on this topic, here is my take on the future based on what we currently know:

1. Any technology that shortens travel time and reduces user cost has the potential to quickly fill the gapping vacuum left by COVID-19 for impacted modes. Reduced demand has severely impacted MOD services (60-plus percent reductions seen in Uber/Lyft use). Rail transit is down 90 percent, and buses by 40 percent. If I were forecasting a new player in urban mobility in the trip range vacated by these services, I would look to e-bikes.

2. Any service, land use, or mode complementing the new work-from-home (WFH) normal will be a winner. The days of four percent WFH are over. While we will not sustain the 30 percent rate driven by the crisis, clearly a new normal in the range of 10 to 15 percent could be possible. With that, rideshare services that best address food/goods delivery may find growth. Malls will change. Many were gravitating to more restaurant, entertainment, and living configurations, which may create fresh micromobility opportunities for MOD.

3. Anyone who says cars are dead is looking through blinders. The enduring trust travelers have in autos seems to be strengthening—maybe not for those in major downtowns, but elsewhere. While the financial implications on electric vehicles and connected automated vehicles in the near term will be limiting, if they seize the near-term vacuum in other modes, MaaS/MOD opportunities may grow.

4. Social distancing is gone but so is my job. Will MOD allow greater transportation equity or widen the gap? It seems as if mobility is central to leveling the playing field, a tax or insurance credit for e-bikes for those with economic disadvantages may become a cost-effective way to connect them to work and services.

5. The race to resilience is on—for air, train, transit, Uber, Lyft, Lime, and Bird. The mode(s) that deliver consumer trust early will benefit. Transit has an uphill cleanliness issue exposed in the pandemic that won’t quickly be forgotten. Rural and less dense urban travel options may find new MOD opportunities.

6. Data will go from being king, to emperor—MOD services generate an immense amount of data, providing a deeper understanding of travel needs and the opportunities/barriers users face. But be aware of the role artificial intelligence will play in MOD’s future.

Having transitioned from pandemic urgency to the unwinding process, we will start to see these dynamics play out in real time. MaaS and MOD are on the clock now—either to shape our communities for the future, or get lost in the flotsam and jetsams of the crisis. Which will it be?
MaaS/MOD

29 Similarities and Differences of Mobility on Demand (MOD) and Mobility as a Service (MaaS)
By Susan Shaheen and Adam Cohen

37 Cities Ready to Modernize Paratransit May Have a New Solution
By Yannis Simaiakis

45 Parking Problems: Motor Vehicle Parking Violations Vastly Surpass Scooters and Bikes
By Calvin Thigpen, Nicholas Klein, and Anne Brown
A Different World

In what seems like a blink of an eye, our world has changed. It is breathtaking how different life is now than in early March. While I have been fortunate not to have family members directly impacted by COVID-19, it has been heartbreaking to watch friends and co-workers deal with this illness and the loss of loved ones. I hope each of you and your families are safe and healthy.

In the short term, COVID-19 has had dramatic impacts on travel, including traffic volumes, mode share, crashes and fatalities, and revenues. While some of these impacts will begin to moderate as the country reopens, travel patterns will not snap back to pre-March conditions for a long time, if ever. It is important to begin thinking about the lasting impacts of COVID-19 on transportation and the industry.

First and foremost are questions of funding. Unprecedented spending has taken place at the federal level to support business and individuals. Should infrastructure spending be looked to as an economic stimulus? How does this impact the surface transportation authorization that expires in September? At the state and local level, revenues from user fees and taxes dedicated to transportation have dropped dramatically as COVID-19 spending increases. Can we make the case to prioritize relatively low-cost, high-payoff safety and operational improvements in a time of limited resources? ITE has joined a coalition of transportation organizations calling on the President and Congress to support additional investment in infrastructure.

What will be the lasting impacts of COVID-19 on transportation demands? Will there be a permanent increase in newly “opened-up” streets to provide more space for increased biking and walking? As transit systems face plummeting ridership and health concerns for workers and riders, in a post COVID-19 world, will users opt for single occupant travel, leading to increased congestion and increased parking demand? Micromobility options have dropped dramatically in many urban areas, causing speculation about the financial viability of this nascent industry. Will the transportation equity gap widen as options decrease? Will widespread experience with remote work result in permanent, long-term telework and virtual engagement?

While we don’t have all the answers, ITE is exploring many of these issues through our ITE Talks Transportation podcasts, Learning Hub webinars, Virtual Drop-Ins, and the e-Community. Our COVID-19 Resources Page is the place to access all of this and more. We need to think about everything we do in the context of a new reality, and take this opportunity to think and operate differently.

This is exactly what we are doing at ITE. In addition to the resources I mentioned above, I encourage you to check out the description of our first-ever virtual ITE Annual Meeting and Exhibition on page 15. While you will find some familiar elements, you will also see us utilizing new ways to make this great content available to our members. If you are a regular ITE Annual Meeting attendee or exhibitor, we look forward to seeing you back. If you have never attended an ITE Annual Meeting, here is your chance to experience the virtual version from the comfort of your home or office. I hope you will join us. As always, you can reach me at jpaniati@ite.org or on Twitter: @JPaniatiITE.

Jeffrey F. Paniati, P.E. (F)
Executive Director and Chief Executive Officer

Jeffrey F. Paniati, P.E. (F)
SIDRA INTERSECTION 9

New **Map Extract** tool reduces Site setup time and effort using OSM data

SI-9 has many new features to help you design intersections and networks with ease – the **Map Extract** tool automatically creates new Sites from freely downloadable OpenStreetMap data.

To learn more: SIDRASOLUTIONS.COM/SI-9
PEOPLE IN THE PROFESSION

Stephen E. Tocknell, AICP (M) was recently named a Fellow of the American Institute of Certified Planners (AICP). Fellowship is granted to planners who have achieved excellence in professional practice, teaching and mentoring, research, public and community service, and leadership. Stephen is a Life Member of ITE and a former board member of the Florida Bicycle Association (FBA). On behalf of the FBA, Stephen worked to secure dedicated funding for new bicycle and pedestrian facilities in Jacksonville, FL, USA. As a member and past chair of the City of Jacksonville’s Context Sensitive Streets Standards Committee, Stephen has a leading role in the enactment of new roadway design standards that will combat the city’s high rates of bicycle and pedestrian fatalities.

Remembrance
ITE remembers longtime member Mark Goode, who passed in 2018, and extends thanks to his wife Dianne Goode for contributing this remembrance.

Mark Gideon Goode III, P.E. (F) of Dallas, TX, USA passed away at his home on November 15, 2018, at the age of 68. He was a Life Member of ITE. Mark earned his bachelor and master of science degrees in Civil Engineering (Transportation) at the University of Texas at Austin, and led an accomplished career of 44 years in transportation planning, traffic engineering, and parking design in Dallas. He began his career at the City of Dallas and later joined DeShazo, Starek and Tang; Jacobs; Dunaway; and Kimley-Horn.

Mark’s many notable projects include Dallas CBD, Dallas Convention Center, Sylvan Thirty Complete Streets, DART, TxDOT, DFW International Airport, Love Field Airport, Texas Instruments, Ballpark at Arlington, Galleria, Plaza at Preston Center, Lincoln Centre and Lincoln Park, Southern Methodist University, Texas Christian University, University of Texas at Dallas, The Hockaday School, Jesuit Preparatory School, Presbyterian Hospital, and Children’s Medical Center. Mark was an active and highly respected leader of the Greater Dallas Planning Council (GDPC), serving as president in 1993 and board member for more than 25 years. Mark also served as chairman of the Dallas Transportation Task Force. He was a Fellow of both ITE and NHI and a member of the Texas ITE District and the American Society of Civil Engineers.

In tribute and honor to Mark and his significant impact on the planning, design, and development of Dallas, the GDPC has established a distinguished annual award, “The Mark Goode Urban Pioneer Award.” Mark is deeply missed by his family, friends, and colleagues.

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.

It is with great sadness and a heavy heart that we share the news that the ITE Texas District (TexITE) has lost a great leader, advocate, friend, and ITE Fellow, Richard Clinton Mobley II, ASLA, AICP (F), known to us all simply as “Rick.”

Rick served as TexITE officer and past TexITE president from 1993-1996, a period he was most proud of, having been the only transportation planner to serve as president in TexITE history. Rick was a proud Aggie alumni (WHOOP!) with a bachelor’s degree in Landscape Architecture and master’s degree in Urban Planning/Transportation Planning. Most of his career was with the former Wilbur Smith Associates, where he served on the board and as regional vice president for 25 years. His last position was with RS&H, Inc., serving as regional director of Transportation Planning. During his 30-plus years of service to his community, Rick consulted on major transportation, land development, parking, transit, and urban planning projects across the United States.

His untimely and unexpected passing on April 13, 2020 leaves an irreplaceable void in the hearts of all those who knew him. He had a big heart, always willing to help, encourage, and mentor younger members, his staff, and future engineers and planners. It is sad to lose a great mind and leader, but his legacy and knowledge will live on through the people he impacted and the work he accomplished.

Rick had gone into semi-retirement the past year, spending more time with his family, enjoying life, and building a new house, yet still finding time to work on various projects, pursuits, and passing down his vast knowledge of parking garages, and urban and transportation planning to his colleagues at RS&H. Despite his overwhelming knowledge and influence, he would give and encourage opportunities for everyone he knew and worked with to grow their career. He had a way of making everyone feel valued, appreciated and equal, a characteristic harder and harder to find in many leaders these days. He was not just a leader or colleague to many in our industry, but a dear friend that will be deeply missed.

ITE would like to thank the Greater Houston Section of ITE for contributing this obituary.
Matthew P. Campbell (S) passed away on April 19, 2020. He previously served as president of the ITE Student Chapter at Montana State University (MSU). After completing his undergraduate studies at MSU, Matthew was working towards a master’s in Civil Engineering when health complications required him to relocate to Seattle, WA, USA for treatment. Matt’s love for transportation drove him to continue taking graduate courses through the University of Washington amidst a painful treatment process. The MSU ITE Student Chapter put together a series of letters to Matthew’s family expressing the influence Matthew had on the lives of transportation students. In an email to the MSU ITE Student Chapter, Matt’s mother Judy stated, “Matthew absolutely loved transportation engineering, and especially being a part of ITE. One of the silver linings of him moving to Seattle for treatment (besides being close to family here) was a hands-on access and viewing of the problems and solutions Seattle has with transportation. He was thrilled to drive through the new Highway 99 tunnel when it opened up and enjoyed observing the continued demolition of the old viaduct. And regularly riding the new light rail system and bus system was a highlight for him (as it was me when we spent a day together, where he taught me all about it and how to get places I needed to go).” Matthew will be greatly missed by his MSU family and those whose lives he touched. To view the scholarship fund his family has set up to honor his memory and legacy, and to share pictures and comments, visit www.livelikematthewc.com.

ITE extends thanks to MSU ITE Student Chapter President Bryce Grame and Matthew’s mother, Judy for contributing to this obituary. 

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

**Canadian**
Ron Lewis
Lavinder Walia
Kenneth Shannon
James Kay
Yogesh Kishor Alwani

**Florida Puerto Rico**
Buse Cengiz
Degonce Goncalves
Sunil Gawai, P.E.
Robin R. Huelsbeek

**Great Lakes**
Tobias Randolph, P.E., PTOE
Jonathan Ryan
David Carlin, P.E.

**Mid-Colonial**
Aung Hlaing
Elia Forberg Ryan
William Stroud, P.E.
Jason N. Meggs, MC/M.PH
Laura MacNeil, AICP

**Midwestern**
Larry Finley
Richard C. Jarrold
Jessica Hutton
Randy Gorton, P.E., PTOE
Thomas E. Ingrum, P.E., PTOE
Jessica Das
Paul Cao
Collin Wilcox
Arin Y. Humeida
Lindsay M. Francis
Jim Hubbell
Mark Green
Brian A. Sadeq
Alzebari
Betsy Witt
Danielle Strothmann
Scott J. Smith, P.E.
Michelle Bresnahan
Fasi Sagir
Grace Hartman
Dustin Smith
Katy Shackelford
Colleen Durfee
Kate Swinford
Sharif Ullah
Parag Gupta
Jesse J. Thorsen, AICP
Cameron Muhic
Lee Bailey
Elaine Baker
Chet Belcher
Paul Boenisch
Cheryl Bornheimer-Kelley
Grant Bowerman
Ozzie Bravo
Sawyer D. Breslow
Ronald R. Clark
Scott Cogan
Timothy Cope
Zach Cowart
Joe Davis
Lee Fine
Caroline Gatti
David Gilmore
Mike Hale
Josh Hartman
Mike E. Herlath
William R. Herrick
David Hoelzel
Austin Holtorf
Charles Hooks
Chris Jenkins
Joe Johnson
Rob Krewson
Steve C. Limkemann
David B. MacDonald
Addison Miller
Molly Nick
Mark O’Connor
John Perlak
Josh Pudlowski
Rodney Richards
Chris Roberts
Joseph Roubinek
Justin Seabaugh
Mike Shirk
Alex Southern
Connor Weatherby
Robert Wolfe
Kelsey Buford
Russell Bausch, P.E., S.E.
Michael Van Slyke
Eric Williamson Nichol
Lucas De Castro, E.I.
Nam Nguyen, E.I.
Jackie Nguyen, E.I.
Chris Urkoski, E.I.
Tyler Reeh, E.I.

**Mountain**
Rebecca Atkins
Heidi Rose Thorne

**Northeastern**
Courtney Worhunsky
Gary Patterson

**Southern**
Adiqa Iqbal
Daniel Capparella
Elham Daha
Max Baker
Sean Pfalzer
Patrick McGilton
Julia Wallace Skare
Melissa D. Kelly, P.E.
Kristina L. Solberg, P.E.

**Texas**
Trish Wallace
Yuefeng Chen

**Western**
Tom Frank
Dustin Elmore
Jared Matthews
Austin Somhegyi
Michael F. Wnek, P.E.
Tammy Lee
Kevin Koesel
Derrick Tokos

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 Supports Members During COVID-19

To support our members in understanding the transportation, organizational, and personal impacts of COVID-19, ITE has prepared a COVID-19 Resources page. Our goal is to create a one-stop shop where you can get the latest information to help you and your organization respond appropriately.

Some of the resources you will find on this page are:

- **COVID-19 statistics**
- **Transportation resources, including webinars and podcasts, and toolkits**
  - Webinar Recording: Open Streets for Pedestrians and Bicyclists during COVID-19
  - Podcast: The Impacts of COVID-19 on Public Transit with Paul Skoutelas, APTA President and CEO
- **Links to the impacts of COVID-19 generally and on the transportation industry specifically**
  - Impact of COVID-19 on California Traffic Accidents
  - COVID-19 Impact Analysis Platform
- **Resources for companies and organizations**
  - CARES Act for Small Businesses
  - Operating Remotely
- **Protecting yourself and your family**
  - Helping Children Cope with COVID-19
  - Our Streets Supplies

Virtual Drop-In Sessions
Since March 30, ITE has held short, highly interactive roundtable sessions on a variety of transportation-related subjects. Check out the full June schedule at https://www.ite.org/events-meetings/virtual-drop-in-sessions/.

Innovative Data Collection Practices
June 1
Ian Baker, Fehr and Peers

Decorative Crosswalks
June 2
Rock Miller, Rock E. Miller & Associates

We would like to thank the following individuals for serving as a convener for one of these sessions:

- Matt Baker, Polara
- Bill Cisco, PTV
- Eddie Curtis, FHWA
- Melisa Finley, TTI
- Wen Hu, IIHS
- Mark Johnson, MTJ Engineering
- Shawn Leight, CBB Transportation Engineering + Planning
- Andy Lockwood, Carmanah Technologies
- Larry Marcus, Forward Progress
- Mark Masongsong, UrbanLogiq
- Randy McCourt, ITE International President
- Hannah McKnight, VDOT
- Matthew Mitman, Fehr and Peers
- Abbas Mohaddes, Econolite
- Pat Noyes, Pat Noyes & Associates
- Matthew Ridgway, Fehr and Peers
- Bill Schultheiss, Toole Design
- Leah Shabum, Vision Zero Network
- Erin Skimson, Movision
- Marvin Ta, Perinni Associates
- Patricia Tice, University of Central Florida
- Rudy Umbs, Tindale Oliver
- Arjan Van Andel, PTV
- Patrick Wright, Traffic Engineer, PennDOT’s Local Technical Assistance Program
- Peter Yauch, Iteris

Final Big Data/Data Analytics Session!
The last session will take place on Monday, June 8 from 1:30-3:00 p.m. ET. To register, visit https://bit.ly/June8BigDataSession
Community Corner
Community Corner highlights the efforts of ITE members to not only encourage transportation education among our youth but to improve the daily lives of people in their community beyond transportation through acts of service.

Making Masks for the Community
ITE International Vice President-Elect Beverly Kuhn, Ph.D., P.E., PMP (F) recently shared on ITE e-Community that she and a group from the Texas A&M Transportation Institute (TTI) have been busy making face masks for use during the COVID-19 pandemic.

In addition to Beverly, other ITE members and TTI staff contributing to the effort are Sue Chrysler, Ph.D. (M), Kay Fitzpatrick, Ph.D., P.E., (F), Karen Dixon, Ph.D., P.E., RSP1 (M), Lisa Minjares, Jane Zhou, and Laura Higgins.

To date, they have sent masks to the following groups:
- The Crossings Methodist Retirement Community, League City, TX, USA
- Women's Care of Florida at St Joseph's Hospital, Tampa, FL, USA
- Friends and family in Alabama, Arizona, Minnesota, Ohio, New York, Virginia, and across Texas
- TTI staff members and their families across the state

ITE Talks Transportation Podcast
New from the Thought Leadership Series
Paul Skoutelas, President and CEO of the American Public Transportation Association, discusses both the short- and long-term impacts of the COVID-19 pandemic on public transit and how the industry is responding, as well as how funding from the CARES Act will be used to assist transit agencies throughout the recovery.

All episodes available at www.ite.org/learninghub/podcast.asp | Subscribe for free via iTunes at http://apple.co/2hOUz8t
The tally of masks made stands well past 300, and the group encourages any agency, department, or group that needs masks to contact them by emailing Beverly at B-Kuhn@tti.tamu.edu. To read Beverly’s original post on the e-Community, visit https://bit.ly/2KMYyiq.

ITE Personnel Changes Announced
At the recent meeting of the ITE International Board of Direction, ITE Executive Director and CEO Jeff Paniati announced several personnel changes. Kathi Driggs, Chief Operating Officer and Jeff Lindley, Chief Technical Officer have both been elevated to Deputy Executive Directors. These title changes were made in recognition of the significant roles that Kathi and Jeff play, not only in guiding ITE activities in their respective areas of expertise, but in leading ITE as a whole.

Colleen Agan, ITE Senior Director, Membership Strategies and Operations, has been promoted to Associate Executive Director. Since joining ITE in 2015, Colleen has played an instrumental role in growing ITE membership, enhancing ITE member services, and guiding the implementation of the ONE ITE initiative. Over that period ITE membership has increased from 13,500 to more than 16,000 and ITE has added 38 public agency memberships. By the end of 2020, all 85 ITE District, Sections, and Chapters will have developed new charters and bylaws and ITE will have created one new wholly new District, reorganized three Districts, and elevated 16 Chapters to Sections. Colleen has played a critical role in supporting the International Board of Direction in developing the ONE ITE initiative and has worked closely with leadership at all levels of ITE to advance these efforts. itej

Set Yourself Apart with Certification!
Gain a competitive advantage and demonstrate your credibility and competency by achieving one of the below certifications.

PTOE® (Professional Traffic Operations Engineer) indicates established proficiency in functional areas of traffic operations

PTP® (Professional Transportation Planner) Certification recognizes demonstrated expertise in transportation planning

RSP (Road Safety Professional) Certification establishes competency for professionals involved in transportation, safety, and health professions who provide for the safety of the traveling public

For more information and applications, visit www.tpcb.org

THE DEADLINE TO APPLY FOR THE OCTOBER 2020 EXAM PERIOD IS JULY 23

Kay Fitzpatrick, Ph.D., P.E. (F) and her husband helped assemble masks and put their scouting skills to use to develop a Celtic slip knot tie for easy wearing.

We want to hear from you!
Have you, your Section, or Chapter taken on a community project or provided assistance to a non-profit organization? Large or small, we want to hear about it! Please send photos (300 dpi or higher) along with a write-up (no more than 200 words) to Pam Goodell, pgoodell@ite.org for inclusion in a future issue of Community Corner.
COUNT. CLASSIFY. ANALYZE.

BLUESTAR NC350

Engineered for precision, the BlueStar Portable Traffic Analyzer delivers highly accurate vehicle counts, classification, speed and length data in any free-flow traffic environment.

Its intelligent software allows for high-quality data analysis and effective presentation in the form of graphs, charts, and tables.

- Traffic data retrievable wirelessly via Bluetooth
- Installation and removal in under 5 minutes
- Designed for maximum portability and durability
- Powerful software for data analysis and clear presentation

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learn more at mhcorbin.com
Help ITE Celebrate 90 Years by Giving $90

In honor of ITE’s 90th anniversary year, please consider donating $90 to support the ITE Legacy Fund. The Legacy Fund helps support our Diversity Scholars, the student-led LeadershipITE scholarships, the STEM competition, and the Matson and Hammond Mentoring Program. Throughout our 90th anniversary year, members will have several opportunities to contribute to the $90 for 90 campaign. Visit bit.ly/ITE90for90Campaign to give. To see who has already donated, go to bit.ly/90for90contributors. Make a difference by adding your name to the list today!

bit.ly/ITE90for90Campaign

My 30 years of participation in ITE has opened up professional opportunities that I couldn’t have dreamed of at the beginning of my career.

Making a donation to ITE’s Legacy Fund ensures that the generations who follow us will have even greater opportunities to experience personal growth and advance our profession. What a worthwhile investment!

Jeff Riegner

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

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/.

2020 JOINT WESTERN & MOUNTAIN DISTRICTS ANNUAL VIRTUAL MEETING
June 28–July 1
https://www.westernite.org/annualmeeting/

ITE INTERNATIONAL ANNUAL MEETING AND EXHIBITION
August 2020 | See page 15 for more information

TEXAS DISTRICT ANNUAL MEETING
September 16–18 | Denton, TX, USA

MOVITE FALL MEETING
September 23–25 | Lincoln, NE, USA

TRANSPO 2020/FLORIDA PUERTO RICO DISTRICT ANNUAL MEETING
October 11–14 | Bonita Springs, FL, USA

MET SECTION ANNUAL MEETING
November 12 | Astoria, NY, USA
Due to the global COVID-19 pandemic, ITE has made the decision to host its 2020 Annual Meeting and Exhibition virtually. While we will not be able to be together in-person, through ITE’s virtual platform we will provide you with a high quality, interactive conference experience.

We have built a strong, rich, and relevant technical program with thought-provoking plenary sessions and technical sessions covering emerging technologies and trends from across the transportation industry. This conference will help you understand the impacts of COVID-19 and how to respond to these changes.

The ITE 2020 Annual Meeting and Exhibition has been designed with you in mind. The program starts at 11:00 a.m. ET and will be spaced out 3 days a week, over a 3-week period. This provides you with the opportunity to manage on-going work responsibilities while still taking advantage of this great learning opportunity. Enjoy the flexibility of registering for a day, a week, or the entire conference. PLUS! Access recordings of any sessions that you are unable to attend.

Tuesday, August 4 - Thursday, August 6 (starting at 11:00 a.m. ET)
Plenary and Technical Sessions, Poster Presentations

Tuesday, August 11 - Thursday, August 13 (starting at 11:00 a.m. ET)
Plenary and Technical Sessions, Poster Presentations, and Workshops

Tuesday, August 18 - Thursday, August 20 (starting at 11:00 a.m. ET)
ITE Council and Committee Meetings

What are the Benefits of Going Virtual?
• No Travel
• An easy-to-use virtual platform
• Reduced registration fees plus group discounts for ITE public agency members
• Flexible registration options for one-day, one-week, or full registration
• Complimentary access to the ITE Exhibitor Showcase for everyone

www.ite.org/annualmeeting

ITE BRINGS THE 2020 ANNUAL MEETING AND EXHIBITION TO YOU!

ITE is Going Virtual — and Invites You to Join Us This August!

As an Attendee, You Will Have Access To:
• More than 30 technical sessions on traditional and emerging transportation topics plus conversations about how COVID-19 will shape the future of transportation.
• Learning from thought leaders on equity in transportation, and exploration of the potential of big data and data analytics.
• Seeing solutions and hearing about emerging technologies from more than 65 exhibitors.
• Eight two-hour workshops that take a deep dive on key transportation topics.
• Ability to interact one-on-one with more than 40 poster presenters.
• ITE Council and Committee meetings.
• Innovative, unique, and fun virtual networking events that help attendees stay connected with one another.

For the most up-to-date information join the Annual Meeting and Exhibit e-community (ITE members only) or visit www.ite.org/annualmeeting.

Registration Opens June 1. Early Bird Deadline is July 1!

ITE Members
Take advantage of $199 full registration rates through July 1!
Ryan J. Westrom, P.E., PTP (M)
Head of Mobility Engagement – East Coast
City Solutions, Ford Mobility

Education
Massachusetts Institute of Technology,
Master of Science in Transportation
University of Illinois at Urbana-Champaign,
Bachelor of Arts in Urban and Regional Planning, Bachelor of Science in Civil and Environmental Engineering

Professional Activity
Transportation Research Board
Professional Engineer since June 2006
Professional Transportation Planner since December 2009

ITE Involvement
ITE MaaS/MOD Steering Committee
ITE Smart Communities Task Force
Ryan has been an ITE member for more than two decades and served as president of his university’s ITE Student Chapter.

Fun Facts
Ryan is a husband and father to three girls. He is a city dweller, basketball junkie, news reader, sports enthusiast, politico, and traveler, in pursuit of livable places and social justice.

ITE JOURNAL: As someone with nearly two decades of experience, how have you seen the mobility landscape evolve during your time in the profession? What are some of the most significant changes?
WESTROM: It’s actually pretty stunning to sit back and observe the industry changes. Some of them quite profound—like the way digital access via smartphones now enables mobility on demand—and some relatively simple—like the availability of high-quality aerals and street imagery via Google Earth. When you consider the moment we’re in, it’s helpful to remember past moments of industry inflection. It appears that we’re essentially still in the third great Industrial Revolution. Tremendous transformations have already taken place, and more are on the way. Our careers in mobility will be broadly spent working out these impacts, as every such revolution has transportation outcomes. Past Industrial Revolutions were the same. In the early 19th century, steam and steel combined to allow the possibility of railroads. This allowed human communication to move faster than ever before. In the early 20th century, electricity and the ability to mass-produce changed access to mobility—democratizing it to the masses—transformed the way we move. This revolution will be just as transformational, and I find the possibility of shaping these new outcomes for good to be incredibly thrilling.

ITE JOURNAL: In your position at Ford, what are some of the biggest emerging trends you see in mobility right now that excites you?
WESTROM: Everyone is eager to leap to autonomy, and when it occurs, it will be incredible. But just as monumental, I believe, will be the advent of connectivity (and this is likely necessary to fully realize the promises of autonomy). The ability for all users to communicate with each other and their surroundings offers incredible opportunity. Congestion mitigation, environmental benefits, and—most importantly—improved safety, are all likely. This is an area where Ford is leading. But there are risks, too. We need a clear federal regulatory picture for technologies in this realm, and digital privacy must be codified. Further, deploying this technology at scale will require significant resources. But the incredible potential is exciting. Connectivity—combined with proliferating new forms of mobility (like micromobility), MOD, and, someday soon, autonomous vehicles—will transform the ability of cities to build safe, reliable, and efficient networks like never before.

ITE JOURNAL: When designing and deploying mobility options for users, how is community engagement key?
WESTROM: Engaging with the community is critical, and I absolutely love helping people understand the importance of well-designed transportation. Access to mobility is one of the fundamental building blocks in our communities. A city is defined by the character of its streets, and these spaces are public! The people of a city own the streets. Thus, the street should serve its citizens. I have loved transportation since I was in junior high, and count it a privilege to work in this field. Through my role at Ford, imparting that passion and helping build an understanding of the importance of accessibility in cities across the country is a joy.
ITEJ: How has MaaS/MOD changed the landscape of urban mass transit systems? What is true for users today that wasn’t true five, 10, or 20 years ago?

VAN ANDEL: Because of new developments like sharing, autonomy, and connectivity, transit systems today are more focused on passenger experience. In the past, mass transit focused on moving buses—now the focus is on moving people. Transit systems are thinking about their relevance to the city, asking questions like, “How can we bring as many people to their destinations in as little time as possible?” or “How can we do that with the fewest emissions and lowest congestion possible?”

We see private providers focusing on where people want to go, not always integrating to transit. As a result, mass transit operators now have to understand how to get their customers from door to door at all times in a very competitive market.

During the last weeks we have seen a complete collapse of mass transit. MaaS/MoD will very likely take a more prominent place in public transportation for the years to come. There is a specific need to get people to and from their essential jobs where mass transit is not a viable option due to the low demand density. It is very likely that MaaS/MoD will take over mass transit where service frequencies of 15 minutes or less cannot be maintained. These concepts are different from what it was five, 10, or 15 years ago.

ITEJ: In your career, when you’ve led MaaS planning projects, what are some of the big picture considerations you have to take into account in order to be successful?

VAN ANDEL: From the onset, you have to define what success means for your project. There are so many different variables these days with MaaS/MoD concepts. Maybe a factor of success is understanding the most important policy measures to facilitate change. Is it clear what is probable to happen, versus what is possible to happen? With all the unknowns and variables of the future, there are a lot of possibilities, but the probable outcomes are fewer.

Understanding the big picture is important, such as knowing the geographical limitations of where you are operating. What is your demand density, and what is the availability of roads and infrastructure? It is also important to understand regional differences between travel preferences and travel behavior. So realistic expectations and a good understanding of the local variables are important considerations.

ITEJ: What is the role of data in MaaS/MOD planning and execution?

VAN ANDEL: MaaS/MoD planning, scenario management, and execution can only happen when you understand the available data. Ensure that you’re getting data from various sources, so you really understand where people are traveling to and from. It is critical to allow data sharing before, during, and after the project. You cannot do any analysis after the fact without a complete view of the data. Cities and local governments should make sure that they get the data they need and have agreements in place to do so.
Los Angeles: Transforming Mobility Options through MaaS

By Jarvis Murray, For-Hire Policy and Enforcement Administrator, Los Angeles Department of Transportation and Joe Iacobucci, West Coast General Manager and New Mobility Practice Leader, Sam Schwartz Engineering

The advancement of emerging technologies as transportation network companies (TNCs), microtransit, and electric scooters/micromobility—coupled with the upcoming autonomous vehicle revolution—will have a profound impact on how people travel through cities. These disruptions can be an asset to regional mobility when cities are proactive and create management structures accompanied by mobility as a service (MaaS) platforms.

Putting concept into practice, Los Angeles, CA, USA is leading the way in active management of transportation options and is moving forward with developing a universal booking system for all mobility options.

Similar to other cities, a growing number of mobility services have entered in Los Angeles over the past decade. In particular, for-hire services have grown rapidly due to advancements in technology and the advent of on-demand app-based services.

A Fresh Look at Modernizing the Taxi Industry

In 2012, TNCs began operating in Los Angeles, and have quickly grown their fleets the last seven years. The arrival of this technology has created drastic challenges for the incumbent taxicab industry that operates more than 2,000 taxicabs that are permitted by the City of Los Angeles. The taxicab industry has seen steep declines in ridership over the same time period. Between March 2013 and March 2017, taxi ridership in Los Angeles decreased by 51 percent.

In response to the cumulative impacts of these services, the Los Angeles Department of Transportation (LADOT) launched the Taxi and For-Hire Vehicle Study in 2018 to assess and recommend a policy and regulatory framework to manage emerging mobility and incumbent taxicab services. Through the leadership of LADOT General Manager Seleta Reynolds, the agency is setting a national example to manage the way that privately provided transportation services operate with the vision to have a unified system that meets the following goals:

• Improving transportation equity and accessibility
• Openness/flexibility to new technology
• Traffic congestion reduction and mitigation
• Reconcile regulatory framework among the various for-hire vehicle sectors (taxicabs, limousines, transportation network companies, etc.)
• Expanding economic opportunities and fostering innovation

Just as important, the study identified the costs of doing nothing, including trends experienced in almost any major metro area:

• Broken/obtudated regulatory system
• Worsening congestion

Figure 1. Timeline of mobility options as they have emerged in Los Angeles, CA, USA
- Unhappy customers, unhappy drivers
- Potential for driver mistreatment
- Poor user experience
- Lack of data-driven results

The end result is transforming from the previous franchise regulatory system to a new open market regulatory system with the intent to innovate and level the playing field. The key recommendations were based upon dozens of interviews with transportation providers, extensive engagement with the City of Los Angeles Taxi Commission and elected officials, peer city regulatory research, and expansive surveys of taxi customers through the Curbed application.

**MaaS through Modernization and a Universal Booking System**

This all ties together with the creation of a universal booking system, or MaaS platform, that actively manages modes to meet the vision and level the playing field for competition, protect the rights of workers, and encourages innovation. The universal dispatch system, estimated to be under development later this year, will be available as a mobile application, similar to other MaaS platforms. This system will also use today’s technology to give the customer an upfront cost based upon time and distance to their destination, thus alleviating the guess work related to taxicab service and providing the pricing certainty that customers have come to expect in For-Hire service. While the upfront pricing structure will be easily facilitated through the universal dispatch mechanism, it will also be available for street hails and all other customers using a taxicab in Los Angeles. In addition, the universal dispatch system will eventually be integrated with an incentive structure to encourage the type of movement and access that is desired within Los Angeles. The incentive system is based on LADOT’s values surrounding mobility, and will require mobility providers to meet certain performance metrics in order to gain access to key markets.

Within each regulatory category (including for-hire, microtransit, goods delivery, micromobility, and urban air mobility) there will be a menu of incentives to reward participants for reaching or exceeding certain performance metrics. For example, using valid and verifiable data through Los Angeles’ Mobility Data Specification (MDS), which all LADOT permitted for-hire transportation providers will be required to connect to over the next year, a for-hire company could be rewarded with access to a taxi stand at an event venue based upon providing transportation to underserved communities or last-mile services to transit stations. With this, LADOT can use choice architecture to encourage private mobility companies towards better decisions.

The universal dispatch system is intended to provide flexibility and allow the LADOT to encourage mobility service providers to serve public interest while encouraging private sector innovation. The foundation of the framework is based on the notion that key performance
indicators will be used to judge the performance of transportation services in real-time while also providing information to customers regarding location of services, fare estimates, transit integration, and other information to aid journey behavior. Each metric is tied to one of LADOT’s goals in order to ensure actionable behaviors are taken that will lead to preferred outcomes.

**Implications in a COVID-19 World**

As Los Angeles focuses on implementing policies to diminish the impacts of COVID-19, a digital solution to managing taxis and emerging mobility is even more relevant. The demand for passenger service has dropped to unprecedented levels since the pandemic surfaced, leading to a great deal of uncertainty in the industry on a variety of fronts. However, as the economy begins opening up, ridership should begin to climb once widespread testing, potential vaccines, and other safety precautions are introduced safeguarding passengers and drivers. COVID-19 has even expanded for-hire service into goods delivery as taxicabs in Los Angeles are now part of an innovative program to deliver food to seniors throughout Los Angeles. A universal dispatch system will provide data to the city regarding customer demand and travel patterns in a post-COVID world, aiding researchers to address questions on behavior change and people’s desire to participate in the shared economy.

LADOT is taking this step forward to ensure that mobility services enhance access to opportunities in Los Angeles through active management of these options. LADOT is well aware of the COVID-19 implications and is factoring in lessons learned to help guide its approach. While there may be delays, and even a slow resurgence of for-hire transportation trips, innovation will continue and LADOT expects to keep leading the charge. The novel approaches outlined here build from the current regulatory framework and utilize MaaS concepts to advance the mobility and congestion management goals, all in the interest of better serving Angelenos now and in the future.

As a mentee, I am able to grow my network and gain insight and guidance from someone outside of my organization. From my experience in this program and through my relationship with my mentor, I will take away a new perspective on what my professional future may look like. I am also looking forward to having another connection and familiar face at future ITE meetings.”

“"We’ve all had help along the way to get to where we are at and I’ve had a lot of help from some pretty tremendous mentors. It is my honor to repay that debt by mentoring the next generation of transportation professionals. Working together we can achieve great things for our profession and our communities.”

Alyssa Ryan
Graduate Research Assistant
Transportation Engineering
University of Massachusetts Amherst

Shawn Leight
Transportation Engineer
CBB Transportation
Engineers + Planners

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Western District Administrator

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.

Dalene J. Whitlock, T.E., P.E., PTOE (F) became the ITE Western District Administrator (DA) in January 2015. Having served on the Western District board as an officer and an International Director, she was already very familiar with the DA position, and says that is in large part due to her longtime friendship with Jenny Grote, P.E., PTP, PTOE (R), who previously held the position for almost 10 years.

“I knew from working with Jenny that a DA is, first and foremost, a resource for the board as its historian and, usually, a senior statesman. It’s amazing how often an issue comes up that is new to the current board but has come up before. Having sat through almost two decades of board meetings, I can provide insight and context as to why decisions were made previously,” Whitlock says.

The Western District has set a five-year term for DAs, and the position usually goes to a previous District board officer so they bring the benefits of historical perspective. This can prove helpful to officers who are just starting their service to the District.

One of the first projects Whitlock undertook as DA was converting the 31 boxes full of paperwork spanning the District’s entire history into digital records. While much of this has been completed, some of the very old correspondence not needed for the current operation of the District remains in boxes in her office. “I am occasionally asked about something that sends me digging through boxes to find the one that might hold the answer. And when that happens, I add the document to our digital record.”

Another early challenge came up when leadership attempted to confirm the District’s non-profit status, and learned that they needed to be incorporated in California. Working with an attorney, new bylaws were crafted that met the requirements for the District to be a non-profit entity, including establishing a new attachment to the bylaws enumerating California non-profit corporate law. The final step of the process required filing all the right documents with the state, which Whitlock describes as “its own unique obstacle course.”

Recently, Whitlock says her role as DA has allowed her to assist the District’s board and its members with an array of issues, from figuring out if a longtime member now living in the new Mountain District could retain membership in the Western District, to helping all 11 Sections remaining in the Western District with the preparation of new charters and bylaws. Members routinely contact her with questions about how to get specific information, and she gets satisfaction from putting them in touch with the appropriate member, officer, or staff member at ITE headquarters who can help them.

In reflecting on her career path, Whitlock remembers that San Diego State University had only one class in traffic engineering, and it piqued her interest. Unfortunately, the summer she graduated, not even Caltrans was hiring civil engineers, so she ended up working as a structural engineer in San Francisco, CA, USA. As soon as Whitlock attained her professional engineering license, she began searching for a different kind of position and was hired by Marin County, CA as an assistant engineer, and subsequently moved on to the City of Santa Rosa, CA as an associate engineer.

Dalene J. Whitlock, T.E., P.E., PTOE (F)
President, W-Trans

Education
Bachelor of Science, Civil Engineering
San Diego State University

Professional Affiliations
American Society of Civil Engineers (ASCE)
Women’s Transportation Seminar (WTS)

ITE Involvement
Student Traffic Bowl Committee Secretary (Current)
International Director (2010-2012)
Transportation Forensics and Risk Management Council Chair (previously Expert Witness Council)
Western District Past President, President (2006-2007)
Western District Local Arrangements Committee Finance Chair (2014)
Western District Local Arrangements Committee Finance Chair (2010)
San Francisco Bay Area Section Past President, President (2002-2003)
“I loved the fulfillment of seeing changes made based on my recommendations that improved the flow of traffic or the lives of residents on neighborhood streets,” Whitlock says. “In 1992, I got an offer to join a consulting firm, and as there weren’t any opportunities for me to move up without moving away from my extended family, I transitioned into consulting. Three years later, Steve Weinberger and I started our own firm. W-Trans just celebrated its 25th anniversary, and I’m very proud of leading the firm through its growth over that time.”

ITE has played an integral part of her career since 1988. Shortly after becoming a consultant, she was doing a traffic study for a small tribal casino, but at that time the Trip Generation manual didn’t have any data for that land use.

Having previously met Rich Romer at an annual meeting (who went on to become ITE International President), Whitlock called him to ask if he had any data. Rich suggested she contact Ken Ackeret, P.E., PTOE (F) who working on a study at the time. “Ken not only helped me with my trip generation, but he became a lifelong friend. Those connections and friendships are priceless, and, for me, are the greatest benefit of being an ITE member,” Whitlock says.

For students and young members, she emphasizes the benefits that come from being involved in ITE. “Success in life has at least a small component—and sometimes a large one—that isn’t about you personally; rather, it’s about circumstances and opportunities. The more people you know and connections you make, the better your chances of moving your career in the direction you want. Being a member of ITE and volunteering as a committee chair or running for office are great ways to get involved and start building that network of peers. By helping others, you are ultimately helping yourself. I’ve held various volunteer positions in ITE and my community, and I feel like I always get more out of these activities than what I invest.”

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**Getting to Know ITE’s Western District**

**Sections**
- Alaska Section
- Central California Section
- Central Coast Section
- Hawaii Section
- Northern California Section
- Oregon Section
- Riverside/San Bernardino Section
- San Diego Section
- San Francisco Bay Area Section
- Southern California Section
- Washington State Section

**U.S. States/Territories Covered**
- Alaska
- California
- Hawaii
- Oregon
- Washington
- Guam
- American Samoa
- Northern Marianas

**Members**
Approximately 3,035 members

**Student Chapters:** 26

**District Leadership**
- President – Neelam Dorman, T.E. (M)
- Vice President – Giancarlo Ganddini, T.E., PTP (M)
- Secretary-Treasurer – Joe De La Garza, P.E. (M)
- Past President – Mark Spencer, P.E. (F)
- International Directors – Carlos Ortiz, P.E., PTOE (M) and Cathy Leong, P.E. (F)

**Did You Know?**
Members of the Western District are proud of the number of innovations that have come from this District. While the ITE Collegiate Traffic Bowl would have been celebrating its 12th championship this year (it has been cancelled due to the coronavirus), the Western District Traffic Bowl for professionals goes back several decades and is the precursor to the student version. Its Student Endowment Fund surpassed $500,000 USD a few years ago because of the District’s strong commitment to its student chapters and future professionals. With its geographic diversity, members represent every facet of traffic engineering, from rural to dense urban environments, high-speed county back roads to multilane freeways, and everything in between, so District meetings have a similarly diverse program that covers topics relevant to the many types of members we host. Everyone benefits from learning and networking with the diversity the Western District offers its members.

**Historical Perspective**
- The Western Section (before Districts were formed) was established in 1947.
- The Western Section was very successful from the beginning and was one of the first to establish a newsletter and hold multiple conferences per year. Since 1951, it has been the largest Section (and eventually District) in ITE.
- The Western District served as a model by which the creation of other Sections in the 1940s and 1950s were established.
Looking Back: Transportation through the Decades

1970s
The 1970s ushered in a decade of change for ITE. A Constitutional Convention convened, resulting in a document that provided better communication and more member involvement in ITE affairs and promoted a better understanding of traffic engineering. A Traffic Technician Curriculum was developed, and as ITE’s membership base became more diverse with professionals representing various aspects of the industry, the Institute of Traffic Engineers changed its name to the Institute of Transportation Engineers in 1976.

The Urban Mass Transit Assistance Act provided additional funding and new regulations on local governments for environmental impact analyses, public hearings, and more.

National Speed Limit – January 1, 1974
Congress imposes a national speed limit of 55 miles per hour and threatened to cut aid for non-compliant states; the regulation is repealed in 1995.

Women out Front
On January 1, 1977, Joan Claybrook became the first female administrator of the National Highway Traffic Safety Administration (NHTSA). That same year, the Women’s Transportation Seminar (WTS) was founded to improve professional and personal advancement and develop industry and government recognition for women in transportation. The first meeting of WTS was held in the Presidential room at Union Station in Washington, DC.

ITE Publishes First Edition of Trip Generation – 1976

ITE Journal – 1977
The title of ITE’s monthly publication changed from Traffic Engineering to ITE Journal.

ITE’s First International Conference – October 1977
ITE holds its 47th annual meeting in Mexico City, Mexico, its first international conference outside of the United States and Canada.

Joan Claybrook speaks at the retirement ceremony to celebrate her years as president of Public Citizen, a public advocacy organization.
Traffic Signs and Signals

Mast-Arm Traffic Signals
Mast-arm traffic signals were invented to improve the visibility of the signals, and became popular in the late 1960s to mid-1970s.

MUTCD 1971 and 1978 Edition
The Manual on Uniform Traffic Control Devices (MUTCD) released two updated editions in the 1970s—one in 1971, and the other seven years later in 1978.1

In 1978, more than half the changes made to the MUTCD was in the signing part of the manual:
• New symbol signs were provided as alternatives for word signs.
• The option of using a black-on-white color scheme for guide signs on conventional roads was eliminated.
• New requirement that all guide signs be white-on-green.

The 1978 edition added two new parts to the manual:
• The first new part addressed traffic control for railroad-highway grade crossings.
• The second new part addressed traffic control for bicycle facilities. The majority of the signs in the bicycle part were identical to those found elsewhere in the manual, although some new signs intended specifically for bicycle facilities were added.
Research and Special Programs Administration – January 1, 1977

The Research and Special Programs Administration was established by the U.S. Department of Transportation to oversee hazardous materials transportation and pipeline safety, transportation emergency preparedness, safety training, and transportation research and development activities.

Bicycle Boom

The popularity of bicycles in the United States soared in the 1970s as urban planners and bike advocates took action to improve infrastructure and funding for this transportation form. “Pedal-ins” were staged to protest the widespread dominance of the automobile as cycling was increasingly linked to environmentalism. As Carlton Reid, transportation journalist and author of *Bike Boom: The Unexpected Resurgence of Cycling*, wrote for *The Guardian*, “In 1973, 252 bicycle-oriented bills were introduced in 42 states. The Federal-Aid Highway Act of the same year provided $120 [million] for bikeways over three years…U.S. bicycle sales, which had been rolling along at 6 million a year, shot up to 9 million in 1971, 14 million in 1972 and 15.3 million the following year, according to a Bank of America report.”

Curbside Cuisine

The idea of mobile food service first appeared in the late 1800s with vendors selling food to workers from covered wagons, and the concept grew in popularity over the next 100 years. In 1974, a man named Raul Martinez started the first taco truck by converting an old ice cream van into a taco making station and parking it outside a Los Angeles bar. [itej]

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Guidelines for Determining Traffic Signal Change and Clearance Intervals

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PURCHASE INFORMATION  Electronic Format: Member $75 | Non-Member $150
Print Format – price of electronic format plus $20 shipping and handling
For more information: http://bit.ly/ClearanceIntervals

Trip Generation Manual, 10th Edition Supplement

The supplement adds walk, transit, and bicycle trip generation data for 53 land uses and truck trip generation data for 50 land uses.

For pricing and purchasing information for the supplement, visit http://bit.ly/TripGenSupplement

Sustainable Traffic Signal Development: An Informational Report of the Institute of Transportation Engineers

The report provides summaries and examples of sustainable practices in planning, designing, and constructing traffic signals. The report also takes a brief look into the future and the convergence of automated vehicles, wireless communications, alternative energy sources, application of data, and automated performance measurement systems.

PURCHASE INFORMATION  Electronic Format: Member $50 | Non-Member $100
For more information: https://bit.ly/STSDPDF
Similarities and Differences of Mobility on Demand (MOD) and Mobility as a Service (MaaS)

By Susan Shaheen and Adam Cohen
In cities around the world, innovative and emerging shared modes are offering residents, businesses, travelers, and other users more options to access mobility, goods, and services. As these shared modes build a network of services in many cities, consumers are increasingly engaging in more complex multimodal decision-making processes. Rather than making decisions between modes, travelers are “modal chaining” to optimize route, travel time, and cost. Additionally, digital information and fare integration are contributing to new on-demand access models for mobility and goods delivery.

On both sides of the Atlantic, two complementary approaches to multimodal access to public and private transportation services are evolving in parallel. In North America, consumers are assigning economic values to transportation services and making mobility decisions (including the decision not to travel and instead have a good or service delivered) based on cost, journey time, number of connections, convenience, and other attributes—a concept commonly referred to as mobility on demand (MOD). In Europe, services that allow travelers to sign up for mobility services in one bundled service are gaining popularity—a concept known as mobility as a service (MaaS). Practitioners are often faced with the questions: “What is MOD?” “What is MaaS?” and “How are MOD and MaaS similar and different?” This article aims to clarify these two concepts, explain their similarities and differences, and highlight a few public sector integrated mobility initiatives.

**Mobility on Demand**

MOD is a concept based on the principle that transportation is a commodity where modes have economic values that are distinguishable in terms of cost, journey time, wait time, number of connections, convenience, and other attributes. MOD enables consumers to access mobility, goods, and services on demand by dispatching or using shared mobility, delivery services, and public transportation strategies through an integrated and connected multimodal network. Passenger modes facilitated through MOD providers include: car-sharing; bike-sharing; ridesharing (carpooling and vanpooling); transportation network companies (TNCs, also known as ridesourcing and ridehailing); scooter sharing; microtransit; shuttle services; taxis; public transportation; and other emerging transportation strategies (i.e., shared automated vehicles, urban air mobility, etc.). The most advanced passenger services incorporate trip planning and booking, real-time information, and fare payment into a single user interface. The most advanced forms of MOD courier services incorporate robotic delivery; app-based courier network services (CNS); and unmanned aerial systems (i.e., delivery drones). In addition to MOD’s emphasis on passenger mobility and goods delivery, MOD also emphasizes transportation systems management to optimize overall operations of the transportation network (i.e., supply and demand). The supply side of the marketplace consists of the providers, operators, and devices that offer transportation services for people or goods and service delivery. The demand side of the marketplace is comprised of travelers and goods, including their choices and preferences. At the center of the MOD ecosystem is multimodal transportation operations management that receives data from all aspects of the system, aggregates the data into an overall picture of current and predicted conditions, and identifies challenges considering a wide range of operational objectives applicable to the specific time period. Figure 1 illustrates the U.S. Department of Transportation’s (USDOT) vision of an integrated and multimodal transportation operations management approach that can interact and/or influence the supply and the demand sides, as well as the key enablers and stakeholders of this multimodal ecosystem.

**Mobility as a Service**

In Europe, another multimodal transportation concept known as MaaS has emerged. MaaS is a mobility marketplace in which a traveler can access multiple transportation services over a single digital interface. Brokering travel with suppliers, repackaging, and reselling it as a bundled package is a distinguishing characteristic of MaaS. In Stockholm, Sweden, UbiGo is a transportation brokerage that provides member households a mobility subscription in place of car ownership. The monthly subscription allows households to pre-purchase mobility access in a variety of increments on multiple modes, operating like a multimodal “digital punch card” for a number of transportation services (including public transportation, carsharing, rental cars, and taxis) (Figure 2).
Figure 1. USDOT’s Architecture for MOD and Multimodal Management.
Although MOD and MaaS share a number of similarities, MaaS primarily emphasizes passenger mobility allowing travelers to seamlessly plan, book, and pay for a multimodal trip on a pay-as-you-go and/or subscription basis, whereas MOD emphasizes the commodification of passenger mobility, goods delivery, and transportation systems management. A key similarity between MOD and MaaS is their emphasis on physical, fare, and digital multimodal integration (Figure 3).

As the public and private sectors increasingly emphasize concepts of integrated mobility, there could be a convergence between MOD and MaaS. A growing number of digital information and fare-payment services are increasingly offering seamless information and payment connectivity among different transportation modes. Increasingly travelers are: 1) searching routes, schedules, near-term arrival predictions, and connections; 2) comparing travel times, connection information, distance, and costs across multiple routes and transportation modes; and 3) accessing real-time travel information across multiple modes. These services can help bridge information gaps, make multimodal travel and public transit more convenient, and enhance decision making with dynamic and real-time information throughout an entire journey. A variety of partnership models are evolving to support mobility integration. Three common integrated mobility public transportation partnership approaches include:

- **Trip planning partnerships** focus on developing and/or integrating multimodal trip planning into a single platform. Common goals of trip planning partnerships include: 1) increasing consumer trip planning convenience, 2) encouraging multimodal transportation, and 3) reducing barriers to public and active transportation use;
- **Fare integration partnerships** allow riders to easily pay for trips that span across public and private transportation modes and allow riders to either pay for: 1) each trip leg using the same fare medium or 2) trip legs employing a single fare (that is apportioned to each mobility provider that serves each trip leg on the backend); and
- **Data sharing partnerships** include partnering with the private sector to share a variety of data types that can enhance local transportation planning, operations, trip planning, and fare integration.

**Public Sector Integrated Mobility Initiatives**

In the United States, USDOT has supported a number of initiatives aimed at enhancing the traveler experience, promoting on-demand mobility, and increasing transportation network efficiency through programs, such as the MOD Sandbox Demonstration, Integrated Mobility Innovation, and Accelerating Innovative Mobility (see sidebar on page 33). For example, the MOD Sandbox Demonstration includes a number of grantees that are piloting smartphone trip planners and app-based fare payment. For example, Dallas Area Rapid Transit (DART) in Texas, USA is piloting GoPass, a multi-agency trip planning and fare payment app to allow riders to transfer between modes and offer time-based passes (i.e., daily, monthly). As part of its Integrated Mobility Innovation program, the Federal Transit Administration (FTA) recently announced funding for a number of urban, suburban, and rural public agencies to develop trip planning and fare payment apps. In Georgia, USA, the Atlanta-Region Transit Link Authority will receive funding to develop a multimodal trip planning app that includes navigation and integrated payment options. In California, USA’s Central Valley, the San Joaquin Regional Transit District will also receive funding to create payment integration and trip planning apps across local and regional public transit providers.
Federal Transit Administration Programs on Mobility Innovation

FTA MOD Sandbox Demonstration
The Federal Transit Administration (FTA) MOD Sandbox Demonstration Program provides a venue where MOD concepts and strategies, supported through local partnerships, are demonstrated in real-world settings. Key goals of the MOD Sandbox include:

- Improving transportation efficiency by promoting agile, responsive, accessible, and seamless multimodal service inclusive of public transit through enabling technologies and innovative partnerships.
- Increasing transportation effectiveness by ensuring that public transit is fully integrated and a vital element of a regional transport network that provides consistent, reliable, and accessible service to every traveler.
- Enhancing the customer experience by providing each individual equitable, accessible, traveler-centric service that leverages public transportation’s long-standing capability and traditional role in this respect.

Eleven MOD Sandbox grantees are piloting a variety of MOD use cases and enabling technologies, such as smartphone trip planners, first- and last-mile programs using shared mobility, and paratransit service using innovative demand-responsive technologies. The MOD Sandbox Independent Evaluation, a review of the performance and impacts of the MOD Sandbox projects, will be completed in 2020.

Early lessons learned from the MOD Sandbox Demonstration sites include:

- Some public transit agencies liked the ability to name partners without a traditional procurement method, while others would have preferred to issue a request for proposal to solicit prospective vendors.
- Public agencies and private sector partners were ambitious in their initial MOD project designs. This resulted in the rescoping or downscaling of many pilot projects.
- Several public agencies noted challenges in working with private vendors, particularly related to contracting and data agreements. In some cases, partners were unable to agree to terms. In others, partners employed a range of techniques to more narrowly tailor data sharing requests to include: less frequent reporting, more aggregate data reporting, and higher levels of geospatial data to protect consumer and proprietary vendor information.
- A number of public agencies expressed ongoing concerns about the reliability of private sector partners such as 1) partners that overpromised and underdelivered; 2) partners that promised data but were unwilling to share sufficient data for the public agency to report key data metrics to FTA; and 3) partners whose business models evolved through the course of the pilot projects, causing project continuation post-MOD Sandbox to be challenging.
- Some project sites reported challenges transitioning from the Sandbox demonstration to regular post-demonstration service because of the drug and alcohol testing currently required by federally funded initiatives.
- Identifying sustainable business models and partnerships is key to enabling the continuation of successful programs post pilot.

For additional information, please visit https://www.transit.dot.gov/research-innovation/mobility-demand-modsandbox-program.

FTA’s Integrated Mobility Innovation Program
FTA’s Integrated Mobility Innovation (IMI) Program funds projects that demonstrate innovative and effective practices, partnerships, and technologies to enhance public transportation effectiveness, increase efficiency, expand quality, promote safety, and improve the traveler experience. FTA’s IMI 2020 funding provides $20.3 million USD for demonstration projects focused on three areas of interest: Mobility on Demand, Strategic Transit Automation Research, and Mobility Payment Integration to:

- Explore new business approaches and technology strategies that support mobility,
- Enable communities to adopt innovative mobility strategies that enhance transportation efficiency and effectiveness, and
- Facilitate the widespread deployment of proven mobility strategies that expand personal mobility.

In March 2020, FTA announced the selection of 25 projects in 23 states to receive funding under the program. FTA received 104 eligible project proposals totaling approximately $107 million USD. For additional information, please visit https://www.transit.dot.gov/imi.

FTA’s Accelerating Innovative Mobility Program
FTA’s Accelerating Innovative Mobility (AIM) Program will provide $11 million USD in challenge grants to help public transit agencies experiment with innovative ways of doing business, such as exploring new service models that provide more efficient and frequent service. The AIM Program will drive transportation innovation by promoting forward-thinking approaches to finance, system design, and service. FTA announced a Notice of Funding Opportunity for the AIM Program in March 2020. For additional information, please visit https://www.transit.dot.gov/AIM.
In addition, states are supporting digital and fare multimodal integration initiatives. The California State Transportation Agency (CalSTA), Caltrans, and intercity rail and local public transit agencies are partnering together in an effort to develop an easy, accessible transportation and payment system throughout the state through the California Integrated Travel Project (Cal-ITP). Cal-ITP seeks to seamlessly integrate four travel phases: trip planning, transaction, journey, and post-journey by leveraging regulation, policy, advocacy, and procurement processes through statewide stakeholder collaboration. Cal-ITP intends to achieve these goals by focusing on:

- Improving efficiencies that lower costs and barriers to trip planning and payment for public transit, including regional and interregional journeys, and
- Enhancing the customer experience for accurate and convenient trip planning and payment.

**Conclusion**

In recent years, travelers are making more on-demand journeys in response to a greater ecosystem of mobility choices. MOD emphasizes the commodification of transportation where consumers make mobility and delivery decisions based on cost, journey time, number of connections, convenience, and other attributes. In contrast, MaaS primarily focuses on passenger mobility aggregation and subscription services. Increasingly, the public sector is supporting MOD and MaaS through a variety of initiatives. Trip planning, fare integration, and data sharing partnerships represent some of the most common ways the public sector can support and leverage the potential opportunities for MOD and MaaS. In particular, digital and fare payment integration can improve traveler information and mitigate multimodal pain points (i.e., multiple fare media, missed connections, long wait times, etc.). By enhancing traveler convenience, multimodal trip planning and fare payment initiatives have the potential to serve as a “multimodal multiplier” where technology magnifies the effectiveness of active and public transportation. [itej](https://www.its.dot.gov/research_areas/mod/index.htm)

**Additional Resources**

Susan Shaheen and Adam Cohen co-authored the U.S. Department of Transportation’s *Mobility on Demand Operational Concept* and *Mobility on Demand Planning and Implementation: Current Practices, Innovations, and Emerging Mobility Futures*. These resources are available at:

- Mobility on Demand Operational Concept - https://rosap.ntl.bts.gov/view/dot/34258

More resources include:


**Acknowledgments**

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**References**


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by the Eno Transportation Foundation. She became vice chair of the TRB Executive Committee in 2020. She is the founding chair of the subcommittee for Shared-Use Vehicle Public Transport Systems of TRB. She also is a member of the Mobile Source Technical Review Subcommittee to the U.S. Environmental Protection Agency’s Clean Air Act Advisory Committee.

Adam Cohen is a mobility futures researcher at the Transportation Sustainability Research Center at the University of California, Berkeley. Since joining the group in 2004, his research has focused on innovative mobility strategies, including mobility on demand, mobility as a service, shared mobility, last-mile delivery, automated vehicles, smart cities, and other emerging technologies. Previously, Cohen worked for the Gwinnett County Department of Transportation, Federal Emergency Management Agency (FEMA), and the Information Technology and Telecommunications Laboratory (ITTL) at the Georgia Tech Research Institute (GTRI). Cohen has co-authored 12 articles, 12 book chapters, and 20 reports on innovative mobility including the potential impacts of innovative and disruptive technologies on transportation.
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Cities Ready to Modernize Paratransit May Have a New Solution

Outdated dial-a-ride services are notoriously unpredictable for riders and transportation agencies alike, but some cities are turning to new technologies to find a fix.

By Yannis Simaiakis
Unfortunately for many paratransit riders—a group with one of the greatest needs for affordable mobility options—actually using a city’s paratransit service can be less than enjoyable.

Around the world, paratransit has a reputation for being unpredictable. Riders schedule their trips one to two days in advance, but the actual time they’re picked up can be an hour earlier or later than originally requested. Despite the two-hour window, if the rider isn’t outside to meet his or her van within five minutes of the driver arriving, they’re considered a no-show.

Once riders are actually in the vehicle, the unpredictable trend often continues. Paratransit rides are shared, and the routes drivers take can sometimes defy logic. Hunter College student Jessica Champagnie told the New York Times that her trip from Manhattan to the Bronx once took a memorable three hours from start to finish because the driver was instructed to pick up another passenger in Queens.1

“Very rarely do they take me straight home,” said Champagnie, who uses a wheelchair. “It’s not a private limo service, but I wonder if they think about how long I’m in the vehicle.”

And it’s not just New York. Each weekday afternoon, Christine Miles waits on the front steps of her Seattle, WA, USA-area home for a ride to work using the county’s paratransit service for people with disabilities.

“Every single day, every single trip is different. It’s predictably unpredictable,” Miles told the Seattle Times.2

Imagine attempting to make it to work or a doctor’s appointment on time when your pickup and ride time are both unpredictable. Despite being federally mandated, paratransit can often leave much to be desired, both because of service quality challenges and how complex it is to operate such a service.

Providing Accessible Transportation for All

Following the passage of the Americans with Disabilities Act (ADA) in 1990, the Federal Transit Administration (FTA) began mandating that paratransit services exist within three-fourths of a mile (1.2 kilometers) of existing ambulatory public transportation in order to correct the fact that many people with mobility concerns could not easily—or in some cases could simply not—use this existing transit. But given the delicate nature of paratransit, the policy gives operators flexibility around negotiated pick-up times and long pick-up windows. Combined with operational challenges such as riders canceling trips soon before pickup (therefore disrupting a planned schedule), vehicle breakdowns, and traffic congestion, most paratransit is highly unpredictable, and therefore not easily usable by anyone on a strict schedule.

This problem isn’t confined to the United States. Similar services that stem from laws addressing access for individuals with disabilities have also gone into effect globally in recent years—the Equality Act of 2010 in the United Kingdom; Law No. 2005-102 in France in 2005; and Germany’s Integration and Rehabilitation of Disabled People in 2001.3

Presently, paratransit and community transport services are concentrated in North America and Europe, despite the fact that persons with disabilities or mobility concerns account for approximately 15 percent of the global population. According to Access Exchange International (AEI), accessible paratransit and community transport services are least available to low-income individuals with disabilities and seniors in countries around the world where they are needed most.3

Without effective and reliable transportation, those with disabilities have more difficulty unlocking the potential for employment, healthcare, education, housing, and community life because of limited access.

These common issues beg several questions, especially: what can be done to provide high quality, cost-effective accessible transportation?

Why is Paratransit Difficult to Perfect?

In most instances, the answer comes down to a blend of issues all stemming from the fact that paratransit programs are often overlooked, and the cost to run them, even with designated funding resources, is significantly more expensive than traditional public transit.
Concerns about operational costs result in many cities holding separate procurement processes for each aspect of the service—in some cases, vehicle operators, customer support, and overflow fleets are each managed by a different company. The move consequently forces the services to operate in silos, making day-to-day operations slower and less efficient.

On top of siloed operations, there is a general lack of new technology used to manage paratransit. Whether they operate the services themselves or outsource management and operations, cities often rely on little or outdated technology to streamline processes, making operations and customer service manual and inefficient. Insufficient technology also leaves users in the dark about their rides, as there are no real-time updates about where their driver might be, and when they will be picked up within that two-hour window.

A combination of factors can also make paratransit services tremendously more expensive to operate when compared to traditional public transportation. In Columbus, OH, USA, the Central Ohio Transit Authority (COTA) found that the cost of providing paratransit continued to grow over time despite ridership staying relatively consistent, at approximately 278,000 trips per year, even after offering free bus fares to paratransit customers as an incentive to use the fixed-route service. COTA, like many agencies, is seeking ways to encourage certain paratransit riders to consider riding fixed-route service which, at an average per trip cost of $6.18 USD, is much less expensive to provide than a paratransit trip, which averages $35.86 USD per trip.

In New York, demand is growing at five times the rate of subway ridership, according to a study by the Citizens Budget Commission (CBC). The report indicates that, despite growing demand, paratransit’s low productivity rate (or trips per hour) contributes to its ballooning costs of $616 million USD annually.

In an effort to curb costs and provide better service for riders, cities are either mirroring COTA’s push to encourage more paratransit riders to take traditional public transportation, or in some cases, subsidizing rides served by taxis and other ridehailing apps. However, most taxis and ridehailing vehicles aren’t wheelchair accessible, meaning many drivers can’t accommodate rides for paratransit’s primary users. Beyond that, cities that have tested such service partnerships found them to be almost too popular with riders who don’t use wheelchairs, only increasing demand and the resulting costs associated with the service.
Paratransit Is Ready For a Disruption

Despite the common issues with dial-a-ride services, some cities and transportation agencies are finding ways to use familiar technology to make a change. Just as there’s been a revolution in the personal transportation sector starting with ridehailing technology and evolving into bike share and electric scooters, we are now seeing a similar wave hitting public transportation, and even paratransit. It’s just taking a bit longer.

Today, a diversity of transportation agencies in cities like Berlin, Germany; Seattle, WA, USA; and Sydney, Australia—including in rural cities like Leicester, United Kingdom—are deploying new forms of on-demand microtransit. Using a mobile app or web portal, riders can book rides on-demand, when they need them, as opposed to days in advance. For these services, advanced algorithms enable multiple riders to seamlessly share the same vehicle in an endless flow without lengthy detours, or inconvenient fixed routes and schedules—a technological enhancement that could positively impact paratransit services’ frequently low efficiency. The technology can also easily accommodate for social distancing regulations in order to ensure that each ride meets safety requirements.

With intelligent routing algorithms, location tracking, turn-by-turn directions for drivers, and rigorous service planning, on-demand technology can offer increasingly affordable and accessible transit while improving common issues such as long waits, long trips, and high operating costs.

But some city leaders question whether the same technology will work for paratransit, and whether riders are ready.

The truth is that the technology behind paratransit and microtransit have the same DNA, with a core focus on efficiently pooling riders by using an algorithm that pairs individuals headed in the same direction. This can be done days in advance or in real-time. However, paratransit riders have unique needs, and technology can and should be adapted accordingly.

While on the surface on-demand paratransit uses wheelchair-accessible vehicles, trained staff, and phone booking much like traditional dial-a-ride programs, it also provides key features to improve rider experience beyond improved routing. For instance, drivers receive real-time information about unique accommodations for individual riders, as well as stop and pickup information built into the digital map, which is highly customized (and can be adapted over time). Riders receive automated calls and texts to better inform them about their upcoming trips; and riders can book trips either by calling an operator like they’re used to or through an easy-to-use mobile app or web portal.

A number of cities and transit agencies have already applied microtransit technology to their outdated paratransit programs, and results are proving to be immensely promising.

Cities Carving a New Path for Paratransit

Cities aren’t just talking about how to use microtransit technology to improve their paratransit services; they’re actually doing it. Despite federal regulations allowing for long pickup windows and booking days in advance, many transit leaders are realizing that service elements such as having a live map that shows riders the location of their driver is more of a necessity than a perk in current times.

In July 2019, The Rapid—the public transit agency in Grand Rapids, MI, USA—collaborated with city government and the Disability Advocates of Kent County to launch “Rapid On Demand,” an innovative six-month pilot project aimed at serving the transportation needs of disabled individuals by providing eligible riders with flexible booking options and shorter wait times. Funded in part by the Michigan’s Mobility Challenge grant, the service supplemented, rather than fully replaced, the agency’s traditional ADA paratransit system. After six months, the pilot project came in under budget by more than $80,000 USD due to operational efficiencies gained by using the new software.

Hampton Roads Transit (HRT) in Virginia also invested in microtransit technology to refine the agency’s already robust paratransit service, and to eliminate functional silos across areas including customer service and operations. The agency’s network covers almost 400 square miles (644 kilometers) across six cities, and provides service for a large, loyal rider base.

In order to refresh operations, HRT invested in new ADA-compliant technology that optimizes vehicle usage while providing riders with as much flexibility as possible, allowing for pre-scheduled trips with plans to gradually introduce riders to the new option to also book trips on-demand. Because the new technology provider
also manages customer support and operational elements such as fleet management and overflow rides, systems function cohesively.

The vision: more efficient driver routing and dispatching will lead to a better rider experience as well as higher vehicle utilization, resulting in lower operational costs. Initial data shows on-time vehicle performance is already improving.

And in the City of Newton, MA, USA, senior citizens have been riding the new “Newton in Motion,” or NewMo, since June 2019. The on-demand ridesharing service provides any resident more than 60 years-old with an efficient, reliable, and affordable way to travel within the city of Newton, as well as to a number of medical facilities outside of the city’s boundaries. While not a dedicated or ADA-compliant paratransit service, the on-demand service replaces an outdated taxi voucher system which required passengers to make reservations at least 72 hours in advance.

In less than a year since launching the service, NewMo made more than 16,000 trips, carrying an average of 50 seniors around Newton per day, which provides a new sense of independence to an entire population of residents.

“I want seniors to be able to stay in Newton and thrive. Reliable, safe, affordable transportation is a key to giving people options for staying involved in their community as they phase out driving. This is a ground-breaking program that I really think can be a game-changer,” says Newton Mayor Ruthanne Fuller.

**Technology That Gives Riders Their Freedom**

Aside from operational efficiency gains, microtransit-powered paratransit also provides a new form of transparency and flexibility for riders. Technology formerly reserved for direct-to-consumer ridehailing, including the ability to book a ride on-demand through a mobile app, track its whereabouts, and see your route, is finally becoming available for paratransit riders.

Rapid On Demand in Michigan improved their riders’ experience in just this way. While Grand Rapid’s legacy paratransit service, Go!Bus, required trip reservations at least one day in advance, and lacked the ability to automatically adjust routes in response to late cancellations and no-shows, Rapid On Demand used microtransit technology to allow customers to book prescheduled or on-demand trips through an easy-to-use mobile application, powered by Via. As many within the rider population do not own smartphones, the service also allowed riders to call a live dispatcher, who could book a ride using the same on-demand technology on their behalf. Such an experience, which many people might take for granted, had some riders saying it gave them their freedom back.

“Rapid On Demand has been such a great resource for me,” one rider says. “I primarily use this service to get to and from work on the days when an early morning or late evening ride on Go!Bus would add more stress to my chronic pain and fatigue. Rapid On Demand combines the safety and security of door-to-door pick up on Go!Bus, with the instant independence afforded through similar ride-share services. Not only that, but it’s incredibly affordable. I love that when I use Rapid On Demand, I am able to be as independent as other people who can just get in their cars and drive to their destinations, yet I’m paying similarly to what a person might pay for a gallon of gas.”

Riders in Virginia, USA have also started to see the benefits of technology-powered paratransit, even after switching from a legacy paratransit provider that enjoyed strong ridership. Users knew their booking dispatcher by name, and they recognized the routes that took them to their weekly appointments.
These comforts of the legacy service made the transition to a new operator a challenge. But, within two months of launch, the new service enjoys lower call-in wait times, fewer late pickups, and an improved rider experience—a strong testament to the adaptability of the new technology HRT began using to modernize its service. Some of the strongest and most common feedback about the new service came down to a simple text message. Riders began receiving automated SMS notifications when their vehicle neared their pickup location, which some riders called the greatest perk of all.

Even in instances where technology adoption is low, microtransit-enabled paratransit services are growing in popularity. While seniors in Newton are able to book a ride using a dedicated mobile app, a majority of riders still call to book their on-demand trips given how few have smartphones. To accommodate seniors with limited mobility, NewMo includes wheelchair accessible vehicles (WAVs) in its custom-branded fleet and offers both curb-to-curb and door-to-door service. Furthermore, all vehicles are retrofitted with step stools and additional handles for an easy and safe boarding experience.

### The Next Wave of the Transportation Revolution

Paratransit may currently be an underdog, but as public transportation continues to evolve, the future of such services looks bright. As transportation leaders and riders continue to embrace on-demand microtransit as a complement to traditional buses with fixed routes and schedules, more and more will likely turn to similar technology to cure paratransit of its bleak reputation.

New technology offers a more enjoyable rider experience and a greater opportunity for seniors and individuals with disabilities to easily access their workplaces and communities—as well as the potential for more efficient operations and lower costs for agencies, cities, and taxpayers. Indeed, several agencies and thousands of individuals who rely on accessible transportation are already looking towards a technology-enabled future.

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**References**


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**Yannis Simaiakis** is a public mobility enthusiast, currently working as general manager of Paratransit at Via. He is passionate about combining his passion in operations, technology, and transport for delivering better and more equitable mobility outcomes. Born and raised in Athens, Greece, Yannis moved to the United States for graduate school and got his Ph.D. in Air Transportation, as well as a master’s degree in Public Policy from the Massachusetts Institute of Technology. He then embarked on a seven-year journey with McKinsey where he worked mostly on transportation and supply chain management with a focus on operational excellence and advanced analytics. With McKinsey, he served clients around the globe and was part of the Boston, MA, USA; Washington, DC, USA; and Sydney, Australia offices.
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Parking Problems: Motor Vehicle Parking Violations Vastly Surpass Scooters and Bikes

By Calvin Thigpen, Nicholas Klein, and Anne Brown

Imagine that you are transported back in time to March 2018—a mere two years ago. You are walking down busy Market Street in San Francisco, CA, USA on your way to work or to go shopping. Suddenly, you are surprised to see three adults whiz by on colorful, electric two-wheeled scooters. You might also be frustrated that some riders seem to leave the scooters in the most inconvenient places, like right in the middle of the sidewalk you’re walking down. You soon find you’re not the only one to notice the sudden appearance of these e-scooters—in the following weeks and months, you see headlines trumpet: “Scooters descend on San Francisco sidewalks” and similar.¹
Fast-forward a year later, and we set out to understand how scooter riders, as well as bicyclists and drivers, park their vehicles. In our study, “Impeding access: The frequency and characteristics of improper scooter, bike, and car parking,” found at https://bit.ly/impedingaccess_study, we answered the following questions: How often do different modes violate local parking regulations or impede access for other travelers? And how might answers to this question inform future reconfigurations of street space for movement and parking?

**Motivation and Methods**

Electric scooters operate in more than 100 cities in the United States and many more throughout the globe. And in each of these cities, policymakers, planners, and engineers are grappling with questions about how to regulate their use and parking. In the absence of good data about how and where scooters are parked, many decision-makers may have no other choice but to rely on anecdotes, news accounts, and observations. Within this context, we aimed to both provide an analysis of parking behavior across several cities and a set of tools and procedures for others to collect even more data in their own city.

We were inspired by work done by other academic researchers and by cities to document rates of parking violations by shared scooters and bicycles. For example, Professor Kevin Fang and colleagues at San Jose State University conducted systematic observations in downtown San Jose, CA, USA, walking around city streets and observing how shared scooters were parked. They found that only 2 percent of the 530 scooters they observed impeded pedestrian access.2

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**Highlights from “Where Do Riders Park Dockless, Shared Electric Scooters?” San Jose Study**

Data collected in June and July 2018 in downtown San Jose, CA, USA. Research team took photos and then coded the parking location of 530 scooters. Findings from researchers Kevin Fang, Asha Weinstein Agrawal, Jeremy Steele, John Joseph Hunter, and Ashley M. Hooper:

- Fewer than 2 percent were blocking access on the sidewalk
- Ninety-seven percent of scooters were parked upright

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**Figure 1.** Previous Scooter Observations in San Jose, CA, USA.

**Figure 2.** Observed Streets in Five Cities (Top-Bottom) Congress Avenue between 7th and 8th in Austin, TX; SW 12th Avenue between Washington and Harvey Milk in Portland, OR, USA; Chestnut Street between Scott and Pierce in San Francisco, CA; Main St. between Hill and Ashland in Santa Monica, CA; and U Street NW between 13th and 14th streets in Washington, DC, USA.
In Seattle, WA, USA, the city’s department of transportation published quarterly reports tracking the rate of dockless bike-share parking compliance. The reports document a sharp decline in the rate of parked bicycles impeding pedestrian access, from roughly 15 percent in the first half of 2019 to 5 percent in the third quarter of 2019, after the city installed on-street and sidewalk parking corrals for shared and personal bicycles.3, 4, 5

This research adapted and expanded on previous studies and reports by systematically documenting the parking practices of scooter riders as well as bicyclists and car drivers across five U.S. cities: Austin, TX; Portland, OR; San Francisco, CA; Santa Monica, CA; and Washington, DC. In each city, research assistants were hired to observe parking behavior of motor vehicles, bicycles, and scooters on a single street block, in a busy commercial corridor, from 11 AM to 7 PM (8 hours) on a Thursday, Friday, and Saturday in the summer of 2019. We chose observation streets in consultation with local transportation planners and academics in each city. The criteria for observation blocks were that they had commercial activity, ample scooter and dockless bike activity, and metered on-street parking. The choice of the study blocks could affect our results, which is one of several reasons we made all the data collection materials and analysis code available for others to replicate across more blocks and cities.

**Main Findings**

What the research assistants reported back after conducting their systematic observations was surprising. Less than 1 percent of bicycles and scooters were improperly parked (7 of 865), while nearly one-quarter (24.7 percent) of motor vehicles were improperly parked (651 of 2631). After digging into the characteristics of the parked vehicles in violation, we found that ridehail, taxi, delivery, and commercial vehicles accounted for 64 percent of motor vehicle violations, despite composing less than one quarter of all parked motor vehicles.

**Recommendations**

*A new toolbox: measuring bike, scooter, and car parking in other cities.*

As a diverse team, including authors from academia, industry, and city government, one goal of this study was to conduct this research in the most transparent way possible. We hoped that by sharing our planned methods before conducting the study—called “pre-registering” by academics—we would make our intentions clear and prevent any internal temptations to tweak the approach or analysis midway through.

But just as importantly, we also wanted to share data as well as methods (e.g. training materials, field observation forms, etc.) so that other researchers and city staff can use our materials for other projects.

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**Vehicle Violation Types by City**

![Vehicle Violation Types by City](image_url)
and purposes and replicate these methods in new settings, such as multiple streets in the same city to draw broader conclusions or the same street over time to evaluate the effect of regulatory changes.

Reconsidering the whole curb.
This study looked at how all major street users park on urban streets and sidewalks. By similarly broadening policy aims beyond just micromobility, city officials can take a more comprehensive approach that ensures safe and predictable access to public rights-of-way for all travelers.

ITE recently published its Curbside Management Practitioners Guide that lays out concrete steps that policymakers and planners can take to re-engineer and regulate the curb. The Guide includes considerations such as implementing “flex zones” that allow for different uses at different times of day or days of the week, designating passenger loading zones for passenger pick-up and drop-off or food delivery, and allocating freight loading zones to reduce double-parking and conflicts. Many of these recommendations help reduce conflicts between different road users, which could improve safety outcomes. The policy solutions also accommodate fluctuations in demand for curb space and parking, and have the added benefit of increasing predictability and productivity of curb space, such as through higher turnover by modes such as taxis, ridehailing, and goods delivery.

Micromobility parking.
Although we observed few bicycle and scooter parking violations (1 percent), improperly parked bicycles or scooters can impinge sidewalk access or pose a danger to people with mobility limitations. We therefore consider ways that cities can reduce the number of improperly parked bicycles and scooters even closer to zero.

Need for ubiquitous bicycle and scooter parking. One of the factors behind the success of dockless, shared scooter and bicycle systems compared to their docked predecessors is their “floating” nature: travelers can pick up and drop off the vehicle near their origin and destination. This might seem like a recipe for parking trouble, but our results showed that where bicycle and scooter parking is provided, riders will use it. In our study, more than one-third of dockless bikes and scooters were parked at or in racks or corrals, which were present on all observed streets.

While we do not suggest that cities require micromobility vehicles to park in corrals or at racks, given the benefits of the free-floating system in attracting travelers to ride a scooter rather than hop in a ridehail or taxi, we do suggest that cities provide plentiful supportive parking infrastructure. By placing racks or corrals at more frequent intervals along a block, cities may help to encourage people to park vehicles in micromobility-designated places and further reduce parking violations.

On-street parking corrals. Dedicating additional space to micromobility parking is further supported by the fact that although bicycles and scooters accounted for 24.7 percent of all parked vehicles, little formal space had been set aside for them to park. A straightforward solution would be to turn a single car parking spot into a bicycle and scooter corral, which could then accommodate about 12 micromobility vehicles. On a busy downtown street, these micromobility parking spaces are likely to see similar if not higher turnover than the car parking space. For local businesses, this could result in easier customer access and increased patronage. For examples of this approach to providing on-street parking corrals, cities can follow the lead taken by Seattle DOT as well as international cases like Auckland, New Zealand that have provided plentiful micromobility parking while still supporting the free-floating model.

Conclusion
While this study looks at parking over a fixed period, the ever-changing, dynamic nature of curb use means transportation professionals must be poised to work with cities and users in many different scenarios. Since completing this study, the world has been radically changed by the COVID-19 pandemic. Many cities have quickly fought to catch up with the public health crisis by adapting their departments of transportation and public transit operations to reduce transmission risk, adjusting curbside parking

Optional on-street parking corral for bikes and scooters on Queen Street in Auckland, New Zealand.
to allow for foot pick-up and additional deliveries, and implementing tactical urbanism-style networks of open or “slow” streets to allow for traveling on foot, bike, or scooter while maintaining physical distance. And in a surprise for industry insiders, many cities around the country, including San Francisco, CA; Los Angeles, CA; and Austin, TX, USA; as well as Brussels in Belgium, Europe, even deemed micromobility as an “essential” transportation service in their community. In a post-COVID world, what will parking demands look like? Will cities change how their curbs are managed to match a change in demand? A silver lining to these uncertain times may be the opportunity to align street and sidewalk space with city priorities and to use data, rather than anecdote, to inform policymaking and better understand needs and trends of parking during and after this uncertain time. For those interested, all of the data collection forms and materials are available on the Open Science Framework website at: https://osf.io/t6sz/e/.

References


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Answer to “Where in the World” on page 14: Memorial Arch, Eastern View, Australia. Photo by Bruce Belmore, P.Eng., PTOE, AVS (F)
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