TRB

TRANSPORTATION RESEARCH BOARD

MEMORANDUM

TO: TRB Executive Committee

FROM: Victoria F. Sheehan, Executive Director

DATE: January 2, 2023

SUBJECT Agenda Book - TRB Executive Committee Meeting
January 11 & 12, 2023

Attached is the agenda book for your review prior to our winter TRB Executive Committee meeting on January 11 and 12, 2023. This year we will meet in the Liberty LM Room (Meeting Level 4), Marriott Marquis Hotel, Washington, DC.

All of you are receiving this information electronically. We will make hard copies available at the meeting for those who requested them. Chair Nathaniel Ford urges all members to review the agenda material prior to the meeting, so that time spent in oral briefings can be reduced to a minimum. This will also expedite the handling of the more routine items on the agenda, allowing more time for discussion of substantive transportation issues. If you have limited time to review the agenda materials ahead of time, I ask that you read the TRB Strategic Plan Implementation in Tab 7 and the Critical Issues in Transportation Update in Tab 9. You are asked to bring your agenda material with you as only late items or corrected material will be distributed at the meeting (A few extra agendas will be available in case you forget yours).

Please note that the electronic PDF version of the agenda book includes bookmarks. In the left column, please click the “Bookmark” icon to find tabs that will take you directly to each agenda item.

While you are attending the Annual Meeting, please consider attending some technical sessions or committee meetings. The program is especially interesting and full this year. For those of you who are relative newcomers to TRB, attending sessions and committee meetings will give you a better understanding of the day-to-day activities of the Board. We have also included a list of activities related to the Executive Committee immediately following the agenda.

I also encourage you to visit the exhibit hall. We depend on revenues from our patrons and exhibitors, and they appreciate meeting Executive Committee members.

I particularly direct your attention to the following sessions and reception on Wednesday; the Chair’s Plenary Session beginning at 1:30 pm, the Executive Committee Policy Session beginning at 3:30 pm, and the Executive Director’s Reception beginning at 6:00 pm. Breakfast will be available each day in the meeting room beginning at 7:30 am.

I look forward to seeing you and to our having a productive meeting.

Attachments

NATIONAL ACADEMIES Sciences Engineering Medicine

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Phone 202.334.2936 Fax 202.334.2920 Email vsheehan@nas.edu www.TRB.org

AGENDA FOR JANUARY 2023 EXECUTIVE COMMITTEE MEETING

TUESDAY, JANUARY 10, 2023

6:00 p.m. - 8:00 p.m.	Executive Committee Reception, Marquis Ballroom Salon 6

WEDNESDAY, JANUARY 11, 2023

Item	Time	Page	Speaker	Type
1. Welcome and Announcements a. Cover Memo b. Agenda c. Zoom Instructions d. Policy Statement on Preventing Discrimination, Harassment, and Bullying	8:30 a.m.	 1 2 6 8	Ford	Information
2. Self-Introductions; Bias/Conflict of Interest	8:40 a.m.	9	All	Discussion
3. Recognition of Outgoing Members of the Executive Committee	9:00 a.m.	11	Ford	Presentation
4. Approval of June 15-16, 2022 Minutes	9:05 a.m.	12	Ford	Action
5. Approval of Consent Agenda a. SPPR Meeting Notes b. Conference Approvals	9:10 a.m.	 22 36	Ford	Action
6. Executive Director's Report a. New Executive Director Priorities b. Status Update for Items not Covered Elsewhere c. Financial Update	9:15 a.m.	 47 54	Sheehan	Information
7. Strategic Plan Implementation a. Status Update	9:40 a.m.	56	Shaheen	Discussion
8. Break	10:00 a.m.			
9. Critical Issues in Transportation Update a. Status Update b. Metrics Discussion	10:15 a.m.	 112 118	Shaheen, Menzies, Kortum	Discussion
10. USDOT RD&T Strategic Plan Update	10:45 a.m.	122	Hampshire, Ibrahim	Information
11. Introduction to Policy Session on Megaprojects a. USDOT Programs on Megaprojects	11:15 a.m. 11:20 a.m.	 125 126	Wilson Pollack	Information

b. White House Summit on Accelerating Infrastructure c. Discussion	11:35 a.m. 11:50 a.m.	126	Paiewonsky Silverberg Wilson	
12. Lunch in Marriott Marquis, Shaw Room	12:05 p.m.			
13. Walk to the Convention Center	1:10 p.m.			
14. Chairs Plenary Session	1:30 p.m.		Ford	
15. Walk back to the Marriott	3:00 p.m.			
16. Policy Session on Megaprojects	3:30 p.m.	127	Wilson Shen Shaw Gray Marchbanks	Presentations /Discussion
17. Executive Director's Reception	6:00 p.m.		Sheehan	

THURSDAY, JANUARY 12, 2023

Item	Time	Page	Speaker	Type
18. Policy Session Follow Up Discussion	8:30 a.m.		Ford/Wilson	Discussion
19. June 2023 Policy Session	9:00 a.m.	129	Houston	Action
20. Technical Activities Update	9:10 a.m.	137	Grimes/Brach	Information
21. TRB Division Committee Report	9:30 a.m.	142	Hendrickson	Information
22. Diversity, Equity, and Inclusion Committee	9:40 a.m.	150	Lewis	Information
23. Minority Student Fellow Programs	9:55 a.m.	156	Febey	Information
24. Young Member's Council	10:05 a.m.	160	Kontou	Information
25. Break	10:15 a.m.			
26. International Subcommittee	10:30 a.m.	161	Iwasaki	Information
27. Marine Board Update	10:40 a.m.	167	Philip	Information
28. Communications Update	10:50 a.m.	173	Mackie	Information
29. Cooperative Research Program Update	11:00 a.m.	177	Hedges	Information
30. Consensus and Advisory Studies Update	11:15 a.m.	188	Menzies	Information
31. Other Business	11:45 a.m.		Shaheen	Information
32. Adjourn	12:00 p.m.			

Reference	D. Purposes and Duties of Executive Committee 212
A. Rosters and Staff 196	E. TRB Policy on Executive Committee Participation 215
B. Organization Charts 204	F. Standing Oversight Committees 217
C. Division Descriptions 205	G. Project Approval Processes 220

Consent Agenda Items	
1) Conferences and Workshops	Brach
2) SPPR Meeting Minutes	Menzies

Next Summer Meeting: National Academy of Sciences (NAS) Building	June 14 & 15, 2023 (Wednesday & Thursday) Location: Washington, DC

Events for Executive Committee Members

New Attendee Engagement Session – Sunday, January 8, 2:30 PM – 4:00 PM, Washington Convention Center, Ballroom AB

Exhibit Hall Opening Reception – Sunday, January 8, 4:00 PM – 7:00 PM, Washington Convention Center, Exhibit Hall D

Exhibit Hall – The exhibits are scheduled Monday, January 9, 9:00 AM – 4:00 PM, Washington Convention Center, Exhibit Hall D

Thomas B. Deen Distinguished Lecture and Paper Award Presentations – Monday, January 9, 6:00 PM – 7:30 PM, Washington Convention Center, Ballroom AB

Exhibit Hall – The exhibits are scheduled Tuesday, January 10, 9:00 AM – 4:00 PM, Washington Convention Center, Exhibit Hall D

Minority Student Fellows Poster Session – Tuesday, January 10, 10:15 AM – 12:00 Noon, Washington Convention Center, Hall A

TRB Division Committee Meeting – Tuesday, January 10, 1:15 PM – 2:45 PM, Marriott Marquis, Tulip Room (Invitations sent to committee members only)

New Executive Committee Members Orientation Session – Tuesday, January 10, 3:00 PM – 3:45 PM, Marriott Marquis, Tulip Room

TRB Subcommittee on FHWA and State DOT Funding – Tuesday, January 10, 4:00 PM – 5:00 PM, Marriott Marquis, Tulip Room (Invitation and Zoom link sent to subcommittee members only)

Executive Committee Reception – Tuesday, January 10, 6:00 PM – 8:00 PM, Marriott Marquis, Marquis Ballroom Salon 6

Exhibit Hall – The exhibits are scheduled Wednesday, January 11, 9:00 AM – 4:00 PM, Washington Convention Center, Exhibit Hall D

TRB Executive Committee Meeting Day 1 – Wednesday, January 11, 8:30 AM – 12:00 Noon, Marriott Marquis, Liberty LM

Executive Committee Lunch – Wednesday, January 11, 12:15 PM – 1:10 PM, Marriott Marquis, Shaw Room

Chair's Plenary Session – Wednesday, January 11, 1:30 PM – 3:00 PM, Washington Convention Center, Ballroom ABC

Executive Committee Policy Session – Wednesday, January 11, 3:30 PM – 6:00 PM, Marriott Marquis, Liberty LM

Executive Director's Reception – Wednesday, January 11, 6:00 PM – 8:00 PM, Marriott Marquis, Marquis Ballroom Salon 6

Exhibit Hall – The exhibits are scheduled Thursday, January 12, 9:00 AM – 4:00 PM, Washington Convention Center, Exhibit Hall D

TRB Executive Committee Meeting Day 2 – Thursday, January 12, 8:30 AM – 12:00 Noon, Marriott Marquis, Liberty LM

TRB EXECUTIVE COMMITTEE HYBRID MEETING INSTRUCTIONS

Sierra Reffell is inviting you to a scheduled Zoom meeting.

Topic: TRB Executive Committee Winter Meetings – Day 1

Date/Time: Wednesday, January 11, 2023, 8:00 AM – 6:00 PM Eastern Time (US and Canada)

Join from PC, Mac, Linux, iOS or Android:
https://nasem.zoom.us/j/96533076122?pwd=N0pJMFBkcU1EWXI5c0E1WTIybXlEZz09
Password: 371754

Or iPhone one-tap :
US: +13017158592,,96533076122# or +16465588656,,96533076122# Or Telephone:
Dial(for higher quality, dial a number based on your current location):
US: +1 301 715 8592 or +1 646 558 8656 or +1 651 372 8299 or +1 312 626 6799 or +1 470 250 9358 or +1 646 518 9805 or +1 213 338 8477 or +1 253 215 8782 or +1 602 753 0140 or +1 669 219 2599 or +1 669 900 6833 or +1 720 928 9299 or +1 971 247 1195
Meeting ID: 965 3307 6122
Password: 371754
International numbers available: https://nasem.zoom.us/u/acLvjQqaV2

Would you like to test your Zoom connection? Please click on the link below.
https://nasem.zoom.us/test

NOTICE: The Zoom service allows audio and any materials exchanged or viewed during the session to be recorded and shared. Please be aware that by participating in this activity, you consent to your voice, likeness, and any materials you provide, being recorded for use and dissemination, without payment of any compensation for such use, in any language, format, or media now known or later devised, and you release the National Academies of Sciences, Engineering, and Medicine from any and all claims, liability, or damages arising from any such use. The Academies will proceed in reliance upon such consent and release. If you do not consent to the foregoing, please do not join the session.

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http://www.nationalacademies.org/about/NA_186023.html

Topic: TRB Executive Committee Winter Meetings – Day 2

Date/Time: Thursday, January 12, 2023, 8:00 AM – 12 Noon Eastern Time (US and Canada)

Join from PC, Mac, Linux, iOS or Android:
https://nasem.zoom.us/j/95430455236?pwd=YVNSOHVPd0s5NjRobVRidDFjZzJFUT09
Password: 583047

Or iPhone one-tap :
US: +13017158592,,95430455236# or +16513728299,,95430455236# Or Telephone:
Dial(for higher quality, dial a number based on your current location):
US: +1 301 715 8592 or +1 651 372 8299 or +1 312 626 6799 or +1 470 250 9358 or +1 646 518 9805 or +1 646 558 8656 or +1 669 219 2599 or +1 669 900 6833 or +1 720 928 9299 or +1 971 247 1195 or +1 213 338 8477 or +1 253 215 8782 or +1 602 753 0140
Meeting ID: 954 3045 5236
Password: 583047
International numbers available: https://nasem.zoom.us/u/aW8ryB3Tp

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http://www.nationalacademies.org/about/NA_186023.html

Zoom Meeting Best Practices

- Use the “Raise Hand” feature to notify the host or current speaker that you wish to speak or use the chat feature.
- Unmute you microphone before speaking.
- Mute your microphone anytime you are not actively speaking.
- Avoid noisy activities like typing while your microphone is on.
- Focus on the meeting – avoid multitasking when you can.
- Monitor chat for conversation.
- Make sure you can see the Zoom windows at all times, especially if someone is sharing their screen.
- Sit somewhere with a neutral background.
- Make sure you camera is on a steady surface to prevent shaking.
- Turn off your camera if you need to take care of business outside of the meeting. Turn the camera back on when you are present in the meeting again.
- Communicate privately with the meeting host or co-host if you need to step away from the computer. Notify the host or co-host when you return.

PREVENTING DISCRIMINATION, HARASSMENT, AND BULLYING:
POLICY FOR PARTICIPANTS IN NASEM ACTIVITIES

The National Academies of Sciences, Engineering, and Medicine (NASEM) are committed to the principles of diversity, inclusion, integrity, civility, and respect in all of our activities. We look to you to be a partner in this commitment by helping us to maintain a professional and cordial environment. **All forms of discrimination, harassment, and bullying are prohibited in any NASEM activity.** This policy applies to all participants in all settings and locations in which NASEM work and activities are conducted, including committee meetings, workshops, conferences, and other work and social functions where employees, volunteers, sponsors, vendors, or guests are present.

Discrimination is prejudicial treatment of individuals or groups of people based on their race, ethnicity, color, national origin, sex, sexual orientation, gender identity, age, religion, disability, veteran status, or any other characteristic protected by applicable laws.

Sexual harassment is unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature that creates an intimidating, hostile, or offensive environment.

Other types of harassment include any verbal or physical conduct directed at individuals or groups of people because of their race, ethnicity, color, national origin, sex, sexual orientation, gender identity, age, religion, disability, veteran status, or any other characteristic protected by applicable laws, that creates an intimidating, hostile, or offensive environment.

Bullying is unwelcome, aggressive behavior involving the use of influence, threat, intimidation, or coercion to dominate others in the professional environment.

REPORTING AND RESOLUTION

Any violation of this policy should be reported. If you experience or witness discrimination, harassment, or bullying, you are encouraged to make your unease or disapproval known to the individual at the time the incident occurs, if you are comfortable doing so. You are also urged to report any incident by:

- Filing a complaint with the Office of Human Resources at 202-334-3400 or hrservicecenter@nas.edu, or
- Reporting the incident to an employee involved in the activity in which the member or volunteer is participating, who will then file a complaint with the Office of Human Resources.

Complaints should be filed as soon as possible after an incident. To ensure the prompt and thorough investigation of the complaint, the complainant should provide as much information as is possible, such as names, dates, locations, and steps taken. The Office of Human Resources will investigate the alleged violation in consultation with the Office of the General Counsel.

If an investigation results in a finding that an individual has committed a violation, NASEM will take the actions necessary to protect those involved in its activities from any future discrimination, harassment, or bullying, including in appropriate circumstances **the removal of an individual from current NASEM activities and a ban on participation in future activities**.

CONFIDENTIALITY

Information contained in a complaint is kept confidential, and information is revealed only on a need-to-know basis. NASEM will not retaliate or tolerate retaliation against anyone who makes a good faith report of discrimination, harassment, or bullying.

Updated December 2, 2021

Conflict of Interest and Bias Definitions

- “Conflict of interest" means any financial or other interest which conflicts with the participation of an individual in particular decisions of the institution because the interest (1) could significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization.
- “Bias" ordinarily relates to views stated or positions taken that are largely intellectually motivated or that arise from the close identification or association of an individual with a particular point of view or the positions or perspectives of a particular group.

Conflict of Interest

- Financial in nature;
- For individual and immediate family;
- Includes *current* employment, investment, and property interests and only lasts for the duration of the project;
- Details provided on forms are confidential;
- Financial conflicts are usually disqualifying

Bias

- Perspective -- point of view;
- Expertise -- relevant to understanding and analyzing the issues;
- Goal is to achieve balance, not disqualify.

Recognition of Outgoing Members of the TRB Executive Committee

TRB would like to express appreciation to the following outgoing members:

- ***Michael F. Goodchild*** *– Member, TRB Executive Committee 2020-2023*
- ***Patrick K. McKenna*** *– Member, TRB Executive Committee 2017-2023*
- ***James M. Tien*** *– Member, TRB Executive Committee 2017-2023*
- ***Julie Lorenz****– Member, TRB Executive Committee 2019-2023*

Thank you for your service to the TRB Executive Committee!

NATIONAL ACADEMIES Sciences Engineering Medicine

TRB TRANSPORTATION RESEARCH BOARD

Executive Committee Meeting Minutes
June 15-16, 2022
Executive Conference and Training Center, Sterling, VA

Wednesday, June 15, 2022

8:30 a.m.
Welcome and Announcements (Ford) Information

a. Policy Statement on Preventing Discrimination, Harassment, and Bullying was noted.
b. Bias/Conflict of Interest Discussion – There were no conflicts of interest reported.

8:40 p.m. Self-Introductions (All) Discussion

8:55 a.m.
Approval of January 12-13, 2022 Minutes (Ford) Action

- The minutes were approved.

8:55 a.m.
Approval of Consent Agenda (Ford) Action

- The consent agenda was approved.

8:56 a.m.
Staff Leadership Reports (Ford, Symmes, Pedersen)

- Greg Symmes of the Academies reported on the search for the next TRB Executive Director, in reference to Neil Pedersen's upcoming retirement. The hope is to select the candidate around late August.
- Neil Pedersen gave his Executive Director's Report with an update on the ongoing sale of the Woods Hole Academies property, the latest federal appointments at key agencies, TRB's operations and its gradual, hybrid model return to the office, Executive Committee membership changes, and a finance report that shows expenditures moving back up to where they were pre-Covid. The Executive Committee gave Neil a standing ovation when he mentioned he has been to 47 TRB Annual Meetings.

9:25 a.m.
TRB Division Committee Report (Hendrickson) Information

- A PowerPoint presentation helped describe the organizational structure of NASEM was provided, detailed the reports the Committee reviewed in the first six months of 2022, and reported on TRB's advances in DEI percentages among volunteers.

9:35 a.m.
TRB 2022-2027 Strategic Plan (Shaheen) Action and Discussion

- A quick overview of the plan was given and it was followed by discussion, including about:
    - Metrics on how our research is being shaped by the most crucial metrics related to key societal issues like climate, equity, and others should be added in the plan. The possibility of forming a small group to move forward on this was discussed.
    - Surveys and communications and outreach should be a part of building impact and outcome metrics.
    - The plan was adopted.

10:10 a.m.
Break

10:15 a.m.
Critical Issues in Transportation (Shaheen) Discussion

- An overview was given of this key TRB report, which is based on major issues and cross-cutting dynamics and was followed by a discussion, which included:
    - It seems some context is lacking in the report on how these issues were chosen.
    - There seem to be quite a few issues missing; for example, the technology section is almost exclusively on CAVS.
    - Some of the language isn't urgent enough, such as in sections on safety and climate. Use the date to say how many years we have, not vague terms like "not immediate."

11:10 a.m.
Panel on Regulatory Issues for AV/CV (Ford) Discussion

- Guest speakers offered an overview of the many efforts needed for AV/CV regulatory issues, including strong federal leadership, research data, public messaging and trust, and much more.
- A discussion followed the presentations.

12:10 p.m.
Lunch

1:15 p.m.
Policy Session on Reimagining Good Movement (Wilson, Dowell, Hayes)

- Overviews were given on the movement of goods since the start of the pandemic and how public consumption has shifted.
- Modal first impressions and perspectives were offered from various Executive Committee members.

3:05 p.m.
Break

3:15 p.m.

Plenary Discussion

- The discussion included discussion of:
  - There are so many players in the goods-movement space and we need to understand those inter-relationships.
  - How do we take the data and use it? That seems to be a good fit for TRB, with something perhaps like a more dynamic tool for the shifting environment of freight movement or partnerships with ports, for examples.
  - Our lack of knowledge in the movement from agricultural production to the distribution centers is not being tracked and it is misinforming our investment decisions.

5 p.m.
Break for Evening Activities

Thursday, June 16, 2022

8:30 a.m.
Policy Session Follow-up Session (Ford) Discussion

- Further discussion occurred from the previous day's discussion on good movement research.

9:05 a.m.
Future Policy Sessions (Houston) Information

- The January session will be on characteristics of successful megaprojects. Speakers will be identified.

9:35 a.m.
Technical Activities Update (Grimes/Brach) Information

- A new brochure has been created with infographics and how to get involved. The TRR and other key publications like the HCM were highlighted. Net revenues from Annual Meeting were down $2 million from 2020. There were some savings in travel, food, and AV. Feedback on AM was detailed.

9:55 a.m.
Communications Update (Mackie) Information

- The new logo and newsletter designs were highlighted, as were the success of media relations and social media and DEI incorporated into our digital projects. Preparations for helping the next Executive Director have ownership of TRB communications are underway.

10:05 a.m.
Diversity and Inclusion Strategic Plan (Lewis) Action

- An overview was made of the 7-point strategy.
- The plan was formally approved.

10:20 a.m.
International Subcommittee Strategic Plan (Iwasaki) Action

- TRB is planning to increase efforts in Africa and will be presenting itself at more international conferences going forward.
- The plan was formally approved.

10:35 a.m.
Marine Board Update (Grabowski) Information

- A report was given on the results of the Marine Board Spring Meeting in Irvine, California, with keynote speaker DOT Deputy Secretary Polly Trottenberg.

10:45 a.m.
Young Member's Council (Kontou) Information

- Highlights were presented, including the well-attended Young Member's session at the Annual Meeting.

11:05 a.m.
Cooperative Research program Update (Hedges) Information

- An update was given on the number of reports CRP released in 2021 and the first half of 2022.

11:30 a.m.
Consensus and Advisory Studies Update (Menzies) Information

- The report releases since the Executive Committee last met were listed.
- A discussion followed about whether CAS should focus on women in transportation or traffic safety trends, or both.

11:50 a.m.
Other Business (Ford) Information

- Having USDOT representation here was valuable. NAS and Keck buildings in downtown was suggested but they may not have rooms big enough. Finding a place with better connectivity services is a priority for future meetings.

12 p.m.
Lunch

1 p.m.
Adjourn

Attendee	In-Person	Virtual	Will Not Attend	Substitutes
CHAIRS				
Nathaniel P. Ford, Chair Chief Executive Officer Jacksonville Transportation Authority	X			
Shawn Wilson, Vice Chair Secretary Louisiana Department of Transportation and Development	X			
MEMBERS				
Michael F. Ableson CEO Arrival Automotive-North America	X			Will attend Wed. only
James (Jim) F. Albaugh President and Chief Executive Officer of Boeing Integrated Defense Systems The Boeing Company (Retired)			X	
Douglas (Doug) C. Ceva VP Customer Lead Solutions Prologis, Inc.	X			
Marie Therese Dominguez Commissioner New York State Department of Transportation	X			
Ginger Evans Chief Strategy Officer CAG Holdings, Inc.		X		
Michael F. Goodchild Professor Emeritus, Department of Geography University of California, Santa Barbara		X		
Diane Gutierrez-Scaccetti Commissioner New Jersey Department of Transportation		X		
Stephen W. Hargarten, Director, Injury Research Center, Associate Dean Office of Global Health, Professor of Emergency Medicine Medical College of Wisconsin		X		
Chris T. Hendrickson Hamerschlag University Professor Emeritus Dept. of Civil and Environmental Engineering Carnegie Mellon University	X			
Randy Iwasaki Leader of State and Local Transportation Amazon Web Services (AWS)	X			
Ashby Johnson			X	

Executive Director Capital Area Metropolitan Planning Organization				
Joel M. Jundt Secretary of Transportation South Dakota Department of Transportation	X			
Drew Kodjak Executive Director International Council on Clean Transportation	X			
Carol A. Lewis Professor, Transportation Studies Texas Southern University	X			
Julie Lorenz Secretary Kansas Department of Transportation		X		Will attend virtually Wednesday and Thursday
Michael R. McClellan VP Strategic and Network Planning Norfolk Southern Corporation			X	
Patrick K. McKenna Director Missouri **Department of Transportation**	X			
Russell McMurry Commissioner Georgia Department of Transportation		X		
Craig Philip Research Professor and Director, VECTOR Department of CEE **Vanderbilt University**	X			
Steward T.A. Pickett Distinguished Senior Scientist Cary Institute of Ecosystem Studies			X	
Leslie S. Richards General Manager **Southeastern Pennsylvania Transportation**	X			
James M. Tien Distinguished Professor and Dean Emeritus College of Engineering, University of Miami	X			
EX OFFICIO MEMBERS				
Michael R. Berube Deputy Assistant Secretary for Sustainable Transportation U.S. Department of Energy	X			
Amit Bose Administrator Federal Railroad Administration U.S. Department of Transportation	X			
Carlos M. Braceras	X			

Executive Director Utah Department of Transportation				
Tristan Brown Deputy Administrator Pipeline and Hazardous Materials Safety Administration U.S. Department of Transportation	X			
Steven Cliff Deputy Administrator National Highway Traffic Safety Administration U.S. Department of Transportation			X	
Richard Corey Executive Officer California Air Resources Board			X	
Nuria I. Fernandez Administrator Federal Transit Administration U.S. Department of Transportation	X			
LeRoy Gishi Chief Division of Transportation U.S. Bureau of Indian Affairs (BIA) U.S. Department of the Interior			X	
Martha R. Grabowski McDevitt Assoc. Chair in Information Systems Professor & Chair, Business Administration Department Director, Information Systems Program LeMoyne College		X		
Major General William H. Graham Deputy Commanding General for Civil and Emergency Operations U.S. Army Corps of Engineers			X	
John T. Gray Senior Vice President Policy and Economics Association of American Railroads	X			Dan Keen Assistant Vice President Association of American Railroads
Robert C. Hampshire Deputy Assistant Secretary for Research and Technology U.S. Department of Transportation	X			
Robin Hutcheson Deputy Administrator Federal Motor Carrier Safety Administration U.S. Department of Transportation	X			
Eleftheria (Ria) Kontou	X			

Assistant Professor University of Illinois, Urbana-Champaign				
Billy Nolen Acting Administrator Federal Aviation Administration U.S. Department of Transportation			X	
Stephanie Pollack Deputy Administrator Federal Highway Administration U.S. Department of Transportation	X			
Craig A. Rutland U.S. Air Force Pavement Engineer Air Force Civil Engineer Center			X	
Susan Shaheen Professor and Co-Director, TSRC University of California, Berkeley	X			
Karl Simon Director, Transportation and Climate Division U.S. EPA Office of Transportation and Air Quality	X			
Paul P. Skoutelas President and CEO American Public Transportation Association	X			
Polly Trottenberg Deputy Secretary of Transportation U.S. Department of Transportation			X	
Jim Tymon Executive Director American Association of State Highway and Transportation Officials	X			
TECHNICAL ACTIVITIES COUNCIL REPRESENTATIVES				
George Avery Grimes CEO Advisor Patriot Rail Company	X			
Pasi Lautala Michigan Technological University	X			
Allison Yoh Executive Officer Countrywide Planning and Development Los Angeles County Metropolitan Transportation Authority			X	
Eleftheria (Ria) Kontou Assistant Professor University of Illinois, Urbana-Champaign	X			
OTHER IN-PERSON ATTENDEES				
Patricia Hu Director		X		

OST-R/Bureau of Transportation Statistics				
Anne Aylward Director of the Volpe National Transportation System OST-R/Volpe Center		X		
Timothy Klein Director Office of Technology Policy and Outreach Office of the Assistant Secretary for Research and Technology	X			
PANEL SPEAKERS				
Kristin White Chief Operating Officer ITS America	X			
Scott Schmidt Vice President, Safety Policy Alliance for Automotive Innovation	X			
Anne Ferro President & CEO American Association of Motor Vehicle Administrators		X		
VIRTUAL ATTENDEES				
Firas Ibrahim Director, Office of Research, Development, and Technology OST-R		X		
Robert Kreeb Division Chief, Office of Crash Avoidance National Highway Traffic Safety Administration			X	
Greg Symmes Chief Program Officer NRCEO		X		
TRB STAFF				
Neil J. Pedersen Executive Director	X			
William Anderson Senior Program Officer		X		Thursday morning only for International Subcommittee
Ann M. Brach Director, Technical Activities	X			
Scott Brotemarkle Marine Board Program Director Senior Program Officer		X		Thursday morning only for Marine Board
Patrice Davenport Deputy Director, TRB Program Development & Strategic Initiatives	X			

Karen S. Febey Senior Report Review Officer	X			
Sierra Hall Executive Assistant	X			
Christopher Hedges Director, Cooperative Research Programs	X			
Russell W. Houston Associate Executive Director	X			
Katherine Kortum Senior Program Officer	X			
Paul Mackie Director, Communications/Media	X			
Stephen Maher Deputy Division Director for Program Content TRB Technical Activities Division	X			
Thomas Menzies Director, Consensus and Advisory Studies	X			
Gary Walker Senior Deputy Director, TRB Program Finance	X			
POLICY SESSION SPEAKERS				
Paula Dowell National Practice Consultant, Integrated Planning Services HNTB Corporation	X			
Jolene Hayes Senior Associate Fehr and Peers	X			
Caroline Mays Director Planning and Modal Programs Texas Department of Transportation	X			

Subcommittee on Planning and Policy Review (SPPR)
Draft Meeting Summary
Wednesday, October 5, 2022
9:00 am – 3:30 pm
Keck Center, Washington DC

Members in Attendance – Susan Shaheen (Chair), Nathaniel Ford, Randy Iwasaki, Drew Kodjak, Carol Lewis, Carlos Braceras (virtual), Chris Hendrickson (virtual), Shawn Wilson (virtual), Julie Lorenz (virtual), Martha Grabowski (virtual), Avery Grimes (virtual)

Staff in Attendance – Neil Pedersen, Russell Houston, Gary Walker, Karen Febey, Chris Hedges, Sierra Reffell, Scott Brotemarkle, Katherine Kortum, Ann Brach, Tom Menzies, Michael Covington, Patrice Davenport (virtual), Stephen Godwin (virtual)

The fall meeting of the Subcommittee on Planning and Policy Review (SPPR) was called to order at 9:00 am on October 5, 2022 at the Keck Center in Washington, D.C. by Susan Shaheen, Chair, SPPR. She began the meeting by welcoming committee members and staff in attendance, followed by a round of self-introductions. Chairman Shaheen briefly reviewed the agenda items for the meeting. She motioned approval of the consent agenda. No items on the consent agenda were raised for discussion, so these items were approved by consent.

Executive Director's Report

Neil Pedersen updated the committee on the status on the transition to the new Executive Director. Neil will continue to serve as Executive Director until his successor assumes responsibilities of the position. The selection process is still ongoing. Neil has volunteered to stay on to assist with the conversion and overlap period. In preparation for the transition, he has prepared an extensive set of transition files in digital format to assist in a smooth transition for the incoming Executive Director.

Neil presented news updates and changes within the USDOT: Robin Hutcheson has been confirmed as Administrator of the Federal Motor Carrier Safety Administration (FMCSA); Steve Cliff resigned as Administrator of the National Highway Traffic Safety Administration (NHTSA) to assume the position of Executive Officer of the California Air Resources Board (CARB). Mr. Cliff will remain as a member on the TRB Executive Committee. Ann Carlson has assumed Mr. Cliff role at NHTSA as the Acting Administrator. Phil Washington has been nominated to be Administrator of the Federal Aviation Administration (FAA). His nomination process is still ongoing it is unclear the timeline it will take to go through confirmation. Shailen Bhatt has been nominated to be Administrator of the Federal Highway Administration (FHWA).

Neil informed the committee of the new Executive Committee membership and officers that will become effective after the January Executive Committee Meetings: Hani Mahmassani will succeed James Tien's slot reserved for an NAE member; Jack Marchbanks has declined

his nomination to fill the slot from the Midwest region. Neil is in discussion with members of the nominating committee regarding a potential nominee to fill the slot. Marie Therese Dominguez was reappointed for a second term to the committee. At this time a candidate to fill the National Academy of Sciences slot in place of Michael Goodchild has not been identified. Neil is working with Greg Symmes on the issue. Shawn Wilson will become the new Executive Committee Chair and Carol Lewis has agreed to serve as Vice Chair. Nathaniel Ford will become the Immediate Past Chair.

Neil announced Jennifer Homendy has agreed to be the 2023 keynote speaker for the Chair's Plenary Session at the TRB Annual Meeting. In May, Secretary Buttigieg expressed his interest to Neil in attending the annual meeting in person, and an official letter of invitation has been sent to him inviting him to be the kick-off speaker for the plenary session. Nathaniel Ford also extended an invitation to Secretary Jennifer Granholm from the Department of Energy to participate in the Chair's Plenary Session. It has been confirmed she is available. Neil and Nathaniel will coordinate with both Secretary Buttigieg's and Secretary Granholm's offices to see if they would agree to the two of them participating in a fireside chat particularly focused on electric vehicles.

Neil presented the TRB award recipients for the 2023 Annual Meeting: Lillian Barrone, retired from Port Authority of New York and New Jersey will receive the Frank Turner Medal for Lifetime Achievement in Transportation; Charles Fuhs of Chuck Fuhs, LLC will receive the Thomas B. Deen Distinguished Lectureship award; Dr Eugene Russell of Kansas State University will received the Robert E. Skinner, Jr Distinguished Transportation Research Management Award; Dr Gongkong Fu of Illinois State University will receive the Roy W. Crum Distinguished Service Award; Neil Pedersen of TRB will receive the W.N. Carey, Jr. Distinguished Service Award; and Julie Lorenz of the Kansas Department of Transportation will receive the George S. Bartlett Award.

Neil updated the committee on the current TRB operations highlighting that most committee and research panel meetings are being held as in person and hybrid meetings. Most conferences are now being held in person, to also include the 2023 TRB Annual Meeting in January. Participation in meetings that last a day and a half to two days such as consensus studies and research panels are being replaced with a series of shorter virtual meetings. Some of TRB's products and services that were delayed due to the pandemic are now catching up, particularly for conferences and some of the cooperative research program activities that required in person participation. TRB staff is currently working under a flexible hybrid work environment. There are still adjustments being made to the plan but the majority of TRB staff are working at least two days a week onsite. About 20 percent of TRB staff are full time telework personnel. The most significant challenges TRB is facing on the operations side is the hiring of new personnel to fill several key vacancies in order to offset the increased funding received for research projects.

Neil gave a quick update on the selling of the Woods Hole meeting facility. Currently the facility is still available with the selling price decreasing from 27.5 million to 22 million.

In terms of TRB's Finances, there have not been many significant changes since the last Executive Committee Meeting. There was a decrease in expenditures in 2021; however, 2022 expenditures are expected to return to 2020 levels. Fiscal year-end increases in funding from the Bipartisan Infrastructure Law will begin to show up starting in 2023. The TRB Core Technical Program reflected lower revenues from 2021. It also reflects the USDOT funding beginning in FY2022 and increased funding revenue from SP&R funding in 2023. The financial projections show TRB maintained its goal of keeping the TRB reserve fund between 75 percent and 100% percent in the last year. Overall TRB is in good shape financially.

Neil concluded his report with reemphasizing that 2022 was the "Year of Resilience" for TRB, due in large part from the dedication of staff and volunteers throughout the pandemic. As the organization evolves and moves forward with a new Executive Director, Neil will continue to reinforce the importance of the Executive Committee and the SPPR in terms of meeting our sponsors', volunteers, and customers' needs; and upholding the high standards of NASEM and TRB's guiding tenets as advisors to the nation. Neil thanked the committee and staff for the support and opportunity to help guide the direction and operations of TRB for the last 7 ½ years.

TRB Strategic Plan Implementation

Neil presented a quick overview on the status of action items and the comments made about each action item in the strategic plan. A number of the action items will have more data and information developed in the year-end report for the Executive Committee. Neil opened the discussion for feedback and guidance from the committee regarding the following specific items within the strategic plan.

- Means to increase awareness of the TRB Annual Meeting, conferences, workshops and committee meetings. How do we do marketing about these activities?
- Survey of members of key stakeholders groups
- Develop materials that demonstrate the values obtained from transportation research
- Identify disciplines and sectors that are underrepresented and develop opportunities
- Increase communications about TRB's professional development opportunities
- Engage with and involve new participants in TRB activities
- Addressing recruitment challenges
- Discussion of Drew Kodjak's suggestion that we develop a set of high level metrics related to the transportation system

Committee members provided their feedback and comments during the discussion:

- Avery Grimes - The work at the Technical Activities Council about the key value proposition will be useful in TRB's marketing efforts.

- Julie Lorenz – In favor of moving toward the balance between education and marketing.
- Susan Shaheen – We need to keep pushing for science and empirical evidence to support claims and manage our projects better.
- Carol Lewis - Create a logo differentiation of web information from TRB's research findings and circle it by mode.
- Carol Lewis - Approach the annual meeting as a pipeline stair step up each year to funnel new participants and young professionals by ways of possible funding to attend the meeting. Find underrepresented groups with limited resources to attend as a means of funding as well.
- Neil Pedersen – Develop a specific program for sponsors to donate funding for young professionals who are unable to receive funding otherwise to hook additional interest.
- Karen Febey – Identify a population that we specifically want to target to make it more palatable for funding.
- Chris Hendrickson – Add more pizzazz in exhibits at the annual meeting.
- Carlos Braceras – Friends of committees is an area we should push in terms of pipelining young professionals to TRB activities and committees.
- Drew Kodjak – Aligning the metrics to critical issues is the right way to go. Describe and articulate why it would be useful for these metrics and what is TRB trying to achieve? What is the data and how will TRB use the data to interpret its goals? Integrate the metrics into critical issues documents.

Neil concluded the discussion by encouraging SPPR members to send any other comments and thoughts related to these items after the meeting.

Technical Activities Report and Annual Meeting Planning

Avery Grimes presented a summary of the top transportation issues discussed at the June 2022 Technical Activities Council meeting. He highlights the complexity of the transportation system and how transportation is a "system of systems" inseparable from the economy, political life, public health, international relations, and other sectors. Each of the top issues: New Trends, Data, Technology; Decarbonization; Resilience; Equity; Workforce; and Highway Safety during COVID, connect with the other issues that impact every aspect of transportation in every mode. These impacts have increased the demand to simplify research findings and develop comprehensive solutions. The rapid acceleration of digitization and automation continues to come up as an important topic in transportation. How the use of data, technology, and analytical approaches can be used in transportation decision making in response to new trends, and new sources of data and technology. He explains that as environmental changes occur in our climate, transportation should focus on building infrastructure that strengthens our resilience to address the changes, through plans to decrease carbon emissions by electrification and shifting freight from trucks to rail to fast track our way to reaching future carbon goals. Avery addressed equity within the transportation workplace and how it should be hospitable, welcoming, and attracting a diverse and inclusive workforce. He explains the importance of equity in serving lower

income neighborhoods that have been negatively impacted by development of transportation operations, and DE&I issues surrounding the aging and differently abled populations. In addition to developing infrastructure and systems in transportation, Avery explains that addressing our nation's transportation workforce is also essential. He underscores the importance of institutions providing the tools, training, and leadership to support a thriving workforce and its customers. Avery also spoke on the highway safety concerns regarding troubling changes in driver behavior that increased during COVID. He highlights the need to conduct more research into the human component of the transportation equation to address the issue of unsafe driving behavior, crashes, injuries, and fatalities.

Avery continued by sharing the charge of the Technical Activities Council (TAC) and their role to provide leadership and tools to thousands of members and volunteers through useful research to the nation. He explains that by doing things in a way that supports the high standards and ethics of the organization through fairness, balance, and objectivity, is the fundamental building blocks for success. He reviewed the core fundamentals that TAC is addressing to guide the organization in the right direction. Avery explains the "inside out strategy" approach that will focus on correcting things internally and then moving toward external opportunities. He further explains the strategy has been in practice for a few years to internally address the Research Record Committee structure, financial staff ethics, and internal procedures. Avery emphasizes that as the organization builds from the inside out, this will allow space to focus on opportunities to be more meaningful as an organization to its researchers, the public, private leaders, and education. Lastly, Avery concluded his presentation by sharing the Transportation Research Record Impact Factor, which in 2021 was 2.019. TRB has continued to show improvement over the years, and Avery reemphasizes to focus more on the process it took to reach the level of impact. In doing so, TRB can continue to increase in value and extend intangible value to its stakeholders through its reputation for excellence and objective science.

Ann Brach continued the Technical Activities presentation with updates on the TRB Annual Meeting. She reports the annual meeting registration has opened, and although it is too early to predict registration outcomes, the current numbers are running ahead of last year. Paper submissions suggest the attendance will be higher than 2022. In addition, she reports extreme delays in visa processing could threaten attendance from some countries and as a result impact international attendance numbers and Pre-Covid numbers in 2023. Out of the annual meeting program, workshops have been posted and committees developed 83 workshops. She presented a pie chart to show the distribution of workshops among critical issues categories, with physical infrastructure, climate change, and travel demand being the leaders in workshops so far. However, Ann noted to the committee that there are topics that are not conducive to workshops and that some committees are more interested in running workshops than others. She reports that a few digital elements have been added to the 2023 annual meeting, specifically encouraging Chairs of committees and subcommittees to provide remote access to these meetings; making high profile sessions available on social media platforms; and providing remote access to TRB throughout the year. Finally, Ann presented the benefits State DOT sponsors and affiliates receive when

investing in the TRB Core Program. The benefits extend to receiving complimentary registration to attend the TRB Annual Meeting, TRB sponsored webinars, TRB convened conferences, etc. She highlights the value of having year round access to thousands of unpaid volunteers that peer review papers, create hundreds of transportation related sessions, develop webinars, and deal with critical and emerging issues. She explains that this unique benefit also contributes to the work of the Executive Committee and keeps the organization at the top of transportation related topics. She also points out that contributions from staff and institutional support in upholding TRB and the National Academy of Sciences values serves a critical part in the success of the core program and its overall common good. Ann further explains that continued support to the core program allows TRB to consistently identify and work on emerging issues and draw new expertise, disciplines, and industry sectors into transportation research.

Critical Issues Update

Tom Menzies and Katherine Kortum presented an update on the 2023 Critical Issues document. Continued work has been put into developing the document, specifically the introduction to the purpose/approach taken in the new edition, followed by introductions for each of the societal goals that are factored in to each critical issue, and a section list of issue areas chosen as critical issues. Tom explains the next step in the process would be to decide which of the issues are in fact critical. Tom enlisted the guidance of the SPPR to help with deciding which critical issue topics should be included in the 2023 edition. Katherine presented the updated graphic that will serve as the centerpiece around the foundational issues and societal goals. She reviewed the societal goals that will aid in developing and supporting a thriving society. She explains that there are comprehensive challenges faced with selecting research topics, and to consider the questions being asked, are they truly research questions or deployment/implementation issues, and can the questions asked be justified? SPPR members provided their feedback for each of the proposed questions related to each of the societal goals:

Climate Change

- Randy Iwasaki – Possible research in the second bullet has been done that could add to the proposed questions. More research can be done on these topics. Some research done in the past has amended charts and numbers that state DOTs use to size culverts and design bridges. There are potential impacts from previous studies but now we're seeing changes from current climate changes.
- Chris Hendrickson – Missing research questions in the areas of climate change. Include questions about research innovations that could move the transportation sector toward net zero carbon emissions.
- Susan Shaheen – Integrate a bullet for research tools and evaluation. Impacts of climate justice should be represented here.
- Drew Kodjak – Critical Issues document has improved dramatically. Questions are directionally correct. These questions can answer/capture a number of research questions. Further parts to umbrella: Question 1, passage of IRA and

how the US will invest its funds effectively and timely. One of the biggest questions now is whether we choose a hydrogen or battery electric pathway for long haul tractor-trailers, or whether we have analytical paralysis.
- Tom Menzies – Add additional sub-bullets with examples of research, giving the reader a clearer understanding, but avoid being exhaustive.
- Carol Lewis – How are we talking about local, state, or national in terms of public policy strategies. How do we include metrics in this piece? Add equity component to reach goals in terms of climate change.
- Susan Shaheen – Needs more about climate justice and how the impacts are not equally distributed, including beyond our borders.
- Neil Pedersen – What parts of the transportation system are most vulnerable in terms of new changes in climate. Take a risk based approach in climate change and address how to implement it in relation with other sections.
- Scott Brotemarkle – Think about adding Marine new fuels infrastructure and storage nationally and internationally. Identify how this can be put into play.

Equity

- Susan Shaheen – Incorporate individuals with disabilities in equity topic
- Carol Lewis – How do we measure equity? Do we have the tools/data? How do we know when we are there?
- Neil Pedersen – Think about the accessibility equity and impact issues.

Safety

- Tom Menzies – Consider narrowing this topic to highway and traffic safety as opposed to other modes.
- Susan Shaheen – How much does safety cross over with personal security and how do we define it.
- Neil Pedersen – Include in the introduction and discussion a broader approach to safety and incorporate the metrics demonstrating the increase in fatalities related to traffic safety.
- Julie Lorenz – Think about the connection between people and behavioral psychology in terms of safety. How do we incentivize people to be more safe? How to address the effect of technology on human behavior?
- Nathaniel Ford – Add in new technologies that are in development now. How do we accelerate the new with the old adoptions for crash protection? Incorporate the infrastructure of road design from start to finish encouraging safety and prevention of unsafe conditions.

Public Health

- Drew Kodjak – Include air pollution into this topic.
- Randy Iwasaki – How to use technology for low cost short haul shuttles to access health care?

- Nathaniel Ford – Thread in equity, safety, and other overlap on this topic.

Economy and Global Competitiveness

- Susan Shaheen – Include workforce related issues. How to draw in/integrate foundational issues to each societal goal.
- Neil Pedersen – Make foundational issues prominent in the critical issues document. Research should focus on issues in travel demand, and financing and governance. There should be a discussion about the issues that are being raised about the fundamental changes that are taking place in travel demand.

At the conclusion of the critical issues discussion, the committee went over next steps for the critical issues document. Tom Menzies informed the SPPR that the next steps would be to submit the document for peer review. He explained that the peer review process would take place late February and there could possibly be a draft by the April SPPR meeting. Neil concluded the discussion suggesting that Tom develop a presentation detailing where things stand with the critical issues document for the January Executive Committee meeting.

Candidate Metrics for Critical Issue Topics

Neil prepared a list of examples used to gather metrics for critical issues topics. He explained that the goal is to have a least two metrics for each of the topic areas. Neil notes that TRB is not in the position to develop data or analysis, so it will rely on secondary sources for the information. TRB will need to ensure the secondary sources are credible and avoid using data and metrics from advocacy groups with a particular point of view. Furthermore, he explains the data will need to be high level and national level metrics, and to avoid metrics that are based upon a study in a particular local area or state. Neil requested the feedback of SPPR members to suggest additional ideas for better metrics that could be used or sources that could provide good metric data associated with the topic areas:

Safety

- Randy Iwasaki – Come up with proactive safety metrics and collect data to make proactive decisions instead of reactive decisions.
- Martha Grabowski – Should we broaden the safety trends beyond surface transportation by mode?
- Carol Lewis – Data that shows the cause of speeding and driving under the influence and the behavioral changes we can address.

Climate Change

- Drew Kodjak – Adjust metrics to say “Trends in total U.S. transportation greenhouse gas emissions my mode.” Source from the EIA or EPA would have

data on the trends. Show how the U.S. is doing compared to international trends in the text.
- Nathaniel Ford – Show the economic monetary impacts for communities in cases of disruptive weather events in transportation.
- Martha Grabowski – Use TRB as the integrator of data in the critical issues document, connecting how changes in technology, public health, and climate change with respect to transportation; influence safety, workforce, equity and economy/global competitiveness.
- Carol Lewis – Map of states local areas with climate change policies over time.

Public Health

- Neil Pedersen – Show data and research on public health safety at the national level. For example, children and asthma rates of those who live close to freeways versus those who do not.
- Drew Kodjak – Track the trends associated with fatalities and injuries in the second bullet. Use data from the EPA from its national air quality report on the percentage of the population living in poor air quality areas.
- Tom Menzies – Metrics that show how transportation has contributed positively. Find metrics that look at the opportunities to improve public health in a positive way.

Equity

- Susan Shaheen – Metrics on the travel distance by transit versus auto.
- Ann Brach – Metrics on broader implications in workforce and equity related to school outcomes for children who live near high volume roadways.

Economy and Global Competitiveness

- Neil Pedersen – Include metrics from other modes other than surface modes. The value of imports and exports through U.S. ports and rail volumes is a measure to look at.
- Carol Lewis – Are the rail volumes going to be reflective of what is exported? What can we learn from rail volumes? What are we measuring?
- Tom Menzies – Look at the percentage of the final product cost related to imports.
- Neil Pedersen – Use metrics to show the trends over time in terms of imports and exports.

Workforce

- Ann Brach – Metrics on broader implications in workforce and equity related to school outcomes for children who live near high volume roadways

Due to time constraints, the remaining topics on Technology and Physical Infrastructure were not discussed. Neil asked SPPR members to think about what TRB can do to increase its impact and leadership of the critical issues document.

Ideas on Additional Steps TRB Could Take to Address Critical Issues

Neil continued the critical issues discussion by posing the questions: How does the critical issues document get used outside of TRB? In addition, what are things TRB can do to get widespread distribution, attention, and impact? The committee provided the following comments and ideas to increase the impact and leadership:

- Nathaniel Ford – Explore the idea of storytelling or a visualization activity to assist people with seeing the problem. Capture the problem in a short, concise, and impactful message through verbal, pictorial, or video that grabs your attention.
- Susan Shaheen – Bring the issues to life in a podcast series that feature critical issue topics and discussion.
- Carol Lewis – Utilize big media coverage to bring awareness to the critical issues document.
- Drew Kodjak – For use of big media coverage, what's new and what's the impact of the issues? Highlight TRB as the authority in determining what's new through the five foundational areas as it relates to transportation. Think about the meaning of the document and the ways it influences impact. Articulate how the information in the critical issues will be used so that it is clear what the impacts are. Determine the target audience TRB wants to influence based on the media outlets used.
- Scott Brotemarkle – Use related widespread media news and headlines to connect the research and studies done by TRB.
- Russell Houston – Work with transportation academics of colleges and universities to adopt a curriculum based on the critical issues in transportation.

New Federal Directives for Open Access and Potential Impacts on TRB Publications

Russell Houston shared a summary of the new directives and requirements for open access to TRB publications and the potential impacts. He explains, in 2013 the White House's Office of Science and Technology Policy (OSTP) put out a requirement that any research reports or scholarly publications developed based upon Federal research had to be made available free to the public one year after publishing. In August 2022, OSTP announced that it is changing its public access policy for federally funded research results. Russell highlights that OSTP will take away the one-year moratorium, requiring that data from federally funded research be made immediately available and publicly accessible by default in agency-designated repositories, excluding delays after publication. Federal agencies have one year to produce and put in place their own policies surrounding the new requirements, by December 31, 2024 when the requirements take effect. Russell reports Alfonse

MacDonald, Director of the National Academies Press (NAP), believes the National Academies is well positioned as it relates to the new requirements because it currently makes all of its publications available free. He further highlights that there is a potential for the Academies to receive more work due to the organization already fulfilling much of the publication requirements. However, most of the underlying data does not meet Section 508 compliance requirements and has the potential to cause issues. Other impact issues that could affect TRB is the current requirements for funds received from statewide planning and research. As of now, funds received from the state do not need to meet the requirements, however the new memo poses the question as to whether that would be brought into the policy. In addition, pre-publication reports do not meet the compliance requirements and as a result could impact the availability of the documents prior to converting to Section 508 compliance. There are still open questions on the new directives that need to be discussed, and currently the National Academies is waiting for further guidance from OSTP.

Executive Committee Meeting Policy Sessions, January and June 2023
Russell Houston informed the SPPR that the policy session topic at the January 2023 TRB Annual Meeting will be on "Successful Megaprojects." The January 2023 Policy Session speakers Eric Shen, Susan Shaw, Jim Gray, and Jack Marchbanks will share the lessons learned in terms of starting and getting megaprojects off the ground, and provide information to individuals that will assist with the success of building megaprojects. Russell requested the guidance of SPPR members to recommend policy session topics for the June 2023 Executive Committee meeting. He suggested four policy session topics. The first topic on Traffic Safety, could explore the causes of increases in serious crashes and fatalities, and how those crashes might be addressed from a policy perspective. The second topic on Equity, could explore programmatic approaches being used to address the equity issues by transportation users and those impacted by the delivery of transportation options. The third topic on Workforce, could look into the efforts underway to successfully attract and retain professional transportation staff, and address some of the staffing challenges as well. The fourth topic on Travel Demand, could explore changes in personal travel demand due to the pandemic. Committee members provided Russell with their feedback:

- Shawn Wilson – In favor of a hybrid of both traffic safety statistics with a focus on inequities that exist in the data.
- Susan Shaheen – Link several of the topics together. Travel Demand changes from people leaving transit and purchasing vehicles, changes in driving speeds, and the effects coming out of the pandemic.

Marine Board Update

Martha Grabowski presented the Marine Board update to the SPPR. She shared the new leadership that will proceed her on the Marine Board. Craig Philip will serve has the new incoming Chair; and Sandra Knight will serve as the incoming Vice Chair. She expressed her gratitude for the partnership with TRB as they continue to embark on issues surrounding policy, technology, and science that are related to maritime and offshore

industries. Martha continued, highlighting the core sponsors that provide support to the Marine Board. The core sponsors come from a host of federal agencies to include the U.S. Coast Guard, U.S. Army Corps of Engineers, National Oceanic and Atmospheric Administration, Bureau of Safety and Environmental Enforcement, Maritime Administration, Office of Naval Research/U.S. Navy, and Supervisor of Salvage & Diving, Naval Sea Systems Command/U.S. Navy. Martha briefly shares the Marine Board's new membership. As of November 1, 2022, five new members, Christopher Hart, Lance Manuel, Jane McKee Smith, VADM Peter Neffenger, and Chris Wiernicki will join the board to bring a variety of expertise and perspectives. She also highlighted the Marine Board's areas of interest, which extends from the Arctic, decarbonization, zero emissions, shipping, and all facets of maritime and offshore topics; each centered around human/intellectual capital, safety, management, culture, and cyber security. She continues with an update on the next 2022 fall Marine Board meeting. The meeting will focus on the impacts of DE&I in maritime infrastructure. She explains the board has decided to carry forward and consider more carefully the influence and interactions between the amount of infrastructure resources around supply chain, resilience challenges, and environmental justice. Martha reports, the fall meeting will also focus on the conversations from the spring meeting by Deputy Secretary Trottenberg and Gina Martinez around communities impacted by shipping ports. The meeting will further consider the impacts on port communities as well as ways to linking the impacted with federal opportunities. She also provides the SPPR with details on next year's 2023 spring Marine Board meeting. She shares meeting will focus on current issues surrounding workforce, training, and education pipelines; coastal resiliency, climate change, and sea level rise; and potential technical tours. Martha concluded her update by briefly highlighting the ongoing activities within the Marine Board. The board recently participated in the 2022 Society of Naval Architects and Learning Engineers Convention in September, where it hosted its first panel on the future of polar shipping. The board will also participate in the 2022 Maritime Risk Symposium, which will be held in November. In addition to the workshops and conferences, the Marine Board also participated in Sponsor Leadership Meetings with MARAD. It will continue into fall 2022 participating in meetings with the Army Core and National Oceanic and Atmospheric Administration; leading into Spring 2023 with meetings with the Bureau of Safety and Environmental Enforcement and Office of Naval Research.

CRP Update

Chris Hedges presented updates on the Cooperative Research Programs (CRP). He gave a report on the products produced by CRP since the April SPPR meeting. The Transit Cooperative Research Program (TCRP) released a report on the Impacts of Vehicle Automation on the Public Transportation Workforce and a Synthesis on Bus Rapid Transit. The National Highway Cooperative Research Program (NCHRP) released reports on performance measure metrics and decision-making, rural transportation issues, and crash modification factors. Chris also shared the NCHRP reports and synthesis of strategies for success within DOTs in working with metropolitan planning organizations, visualization of highway performance measures, and improving work zone safety with use of smart work zone technologies. He reported that the NCHRP released reports on digital modeling and

how it applies to construction contract documents, assessing and mitigating moisture susceptibility of asphalt pavements, and parking pricing strategies for airports. Chris further highlighted the reports from the Airport Cooperative Research Program (ACRP) on considerations for pollinator programs at airports, a document on the relationship between air service economic regional development, and a joint collaboration by TCRP, NCHRP, and ACRP on command level decision making for transportation emergency managers. A third report from the Behavioral Traffic Safety Cooperative Research Program (BTSCRP) was also released on variable message signs for traffic safety messaging. Chris concluded his report with highlighting the new series of CRP Special Releases. He explains the series is intended for the publication of studies that do not fit with CRP's regular programs. The series contains three studies conducted at the request of the Federal Highway Administration on evaluations of the asphalt binder quality tester, the exploratory advanced research program, and of ultra-high performance concrete connections.

Consensus Studies Update

Tom Menzies presented the Consensus and Advisory Studies (CAAS) update. He shared the data origins of consensus and advisory projects from 2018-2022. During this period, CAAS produced 36 studies/reports. The data shows a leading number of the requests are from congressional offices and agencies. He further discusses the sponsors associated with supporting consensus studies and advisory activities. He reports the division currently has 20 different sponsors, including the Federal Highway Administration (FHWA), United States Coast Guard (USCG), and Pipeline and Hazardous Materials Safety Administration (PHMSA) as the top leaders of sponsored studies. The division also received new sponsorship from the Office of Naval Research (ONR), Federal Maritime Commission (FMC), and the Federal Motor Carrier Safety Administration (FMCSA). During this period, the CAAS project received $34 Million in total funding. Tom reports that a large percentage of the funds were received from FHWA at 27%, and the USCG at 15%. He also compared the percentage of CAAS projects by modes, with marine/offshore being the dominant mode at 27%, followed by highway transit at 19%, and aviation at a steady 11%. Tom also shared the results from the general topic areas of CAAS studies, safety/regulation being the dominant issue at 50%; followed by infrastructure/investment at 31%; and energy/hazmat at 22%.

Tom touched on TRB's ongoing collaborations with other units in the academies. Some of the recent collaborations within other divisions include, the Division on Earth and Life Studies (DELS), Division on Engineering and Physical Sciences (DEPS), Division of Behavioral and Social Sciences and Education (DBASSE), the Gulf Research Program (GRP), and Board on Energy and Environmental Systems (BEES). These ongoing collaborations are working on studies and reports that address various topics as it relates to transportation in infrastructure, safety, maritime/offshore, and environmental issues. He briefly updated the SPPR on the status of congressionally mandated studies that are underway. At the request of the PHMSA, CAAS is working on a study for installing automatic shutoff valves on gas and oil transmission pipelines. This report is expected to be released spring 2023. CAAS is also conducting a study for USCG on new statutory

authorities needed by the Coast Guard. The Consensus Studies division is producing a study funded by the Office of the Assistant Secretary for Research and Technology (OST-R) and the Environmental Protection Agency (EPA) on repurposing plastics waste in infrastructure.

Tom informs the SPPR that the status of the Federal Aviation Administration (FAA) study on emerging trends in aviation safety is in phase 2 of its biennial report period. He further highlights the new studies underway. The FMCSA is funding a study on truck driving compensation impacts on safety; the FRA contracted a study on the safety impacts of very long trains; another study on the best practices for provision of chassis has been requested by the Federal Maritime Commission (FMC), and lastly a study started in July 2022 that looks into how the Coast Guard deploys its inspectors for the inspection of LNG carriers.

Tom continued his update with sharing the reports CAAS completed since the last April SPPR meeting. These reports included the two-phase studies looking at movement of LNG by rail tank cars, and emerging hazards in aviation safety. CAAS released its annual letter report to the Federal Highway Administration from its research coordinating committee. The committees focus looked at the work and plans of the FHWA on complete streets and identifying the gaps to whether or not the treatments and designs have an impact on safety. He also highlighted the pending studies expected to be confirmed from the Federal Highway Administration. Of the various studies, CAAS will look at the ways in which state DOT's manage highway storm water and the ways in which it is modeled. He reports there is one remaining study from the Bipartisan Infrastructure Law. For this study, CAAS will look at the transportation ITS workforce structure and develop ways to increase diversity. Finally, CAAS received $1.5 Million in funding from Congress to develop equity metrics that state local governments and NPOs can utilize to prioritize their projects in terms of equity and ensuring it is considered appropriately.

Tom concluded his presentation by giving recognition to the division's staff members and the hard work they put in to producing high profile projects.

Meeting Adjournment

Neil Pedersen gave final closing statements by thanking the member of SPPR members the thoughtful input, advice, and assistance it provides to the Executive Committee. Susan Shaheen adjourned the meeting at 2:40 pm.

Cosponsored Conference Approval Form

Proposals for TRB Sponsored/Cosponsored Conferences (ACTION – Consent Agenda)

The following criteria are used in evaluating proposals for conferences, workshops, and similar activities. In general, an activity should not be proposed unless it draws a favorable response to all applicable criteria. The TRB staff and the proposing committees feel that the conferences being proposed satisfy these criteria.

1. Is the proposed activity consistent with TRB's mission?
2. Does it have a high probability of producing worthwhile results?
3. Is the purpose of the activity objective and noncommercial? (Might the undertaking of the activity or the potential result give TRB an image of bias in an area in which it must remain neutral?)
4. Are the available time and funding adequate to conduct it in a proper manner and to carry it to a logical conclusion?
5. Is it within the existing staff capability of TRB or a capability that can reasonably be established?
6. Can committee members necessary to guide it be identified and their services obtained?
7. Does TRB retain the requisite control? Alternately, in case where TRB is not the lead organization, will TRB be involved in developing the program, and will TRB receive appropriate recognition?
8. Does it duplicate other efforts? Has the subject received all of the attention that is justified for the present time?
9. Is there a more appropriate organization, within the National Research Council or elsewhere, to handle it?

The Executive Committee's approval is requested for four TRB Co-sponsored conferences as part of the consent agenda.

CONFERENCES PROPOSED FOR SPONSORSHIP BY TRB		
Title	**Date**	**Location**
1. Transforming Transportation 2023*	March 14-15, 2023	Washington, District of Columbia
2. XXII Pan-American Conference on Transportation and Logistic Research*	August 2-4, 2023	Guayaquil, Ecuador
3. Bridging Transportation Researchers (BTR) Conference #5*	August 10-11, 2023	Online
4. 14th Annual Maritime Risk Symposium*	November 14-16 2023	New York, New York

* TRB participates as a cosponsor

Cosponsored Conference Approval Form

Title:	Transforming Transportation 2023
Location:	Wash, D.C., United States
Date:	March 14-15, 2023
Description:	Transforming Transportation 2023, the 20th edition of this flagship event, will be an in-person, face-to-face experience organized at the World Bank Headquarters in Washington, DC, on March 14-15, 2023. Transport professionals will meet and engage in innovative ways to learn, interact, and create new connections. New online features will also enable virtual attendance of most sessions. Transforming Transportation 2023 will consider the current economic scenario, post-COVID recovery, and COP27 commitments as starting points to reimagine transport to make it more inclusive, safe, sustainable, and efficient for everyone. https://www.transformingtransportation.org/
Anticipated Attendees:	3000
Target Audience:	Policy Makers, practitioners, researchers, international developers, and academics in transportation from around the global.
Admission:	Open Registration
Anticipated Products:	papers & presentations
Convening Organization:	World Bank and WRI Ross Center for Sustainable Cities
Other Sponsors:	
Funding:	
TRB Standing Committees:	International Coordinating Council (A0020C) Committee on Transportation in Developing Countries (AME40)
TRB Role:	Committee member(s) to organize or participate in session(s)
TRB Staff Contact:	William Anderson

Cosponsored Conference Approval Form

Title:	XXII Pan-American Conference on Transportation and Logistic Research
Location:	Guayaquil, Ecuador
Date:	August 2-4, 2023
Description:	With more than 40 years of tradition, the Pan American Congress on Traffic, Transportation, and Logistics Engineering (PANAM) is the largest and most prestigious conference and research in Latin America in these areas of knowledge. It addresses a wide range of research, practice, and teaching topics. Held every two years since its inception in 1980, it is regularly attended by hundreds of expert transportation researchers, consultants, decision-makers, and transportation and logistics professionals. Since its first edition in 1980, PANAM has had a very dynamic geographic representation. The XXII Congress will be held in Guayaquil, Ecuador in 2023, organized by the Escuela Superior Politécnica del Litoral ESPOL. https://eng.panamstr.org/events/ecuador-2023
Anticipated Attendees:	400
Target Audience:	Attendance open to all and targets students, practitioners, professionals, and academics to participate.
Admission:	Open Registration
Anticipated Products:	papers & presentations
Convening Organization:	Escuela Superior Politécnica del Litoral (ESPOL) and the Pan American Society for Transport and Logistics Research (PANAMSTR)
Other Sponsors:	The Escuela Superior Politécnica del Litoral (ESPOL) will be the host of the conference. In addition to the ICC, the conference is being organized with the assistance of the a number of transportation research organizations from different countries, such as: Network of Academics in Mobility (Red Academica de Movilidad, Colombia), Chilean Transport Society (Sociedad Chilena del Transport, Chile), National Association of Transportation Research and Education (Associação Nacional de Pesquisa e Ensino em Transportes, Brazil), Forum of Transportation Researchers (Foro de Investigadores del Transporte, Spain), and the Chinese Overseas Transportation Association (COTA).
Funding:	
TRB Standing Committees:	International Coordinating Council (A0020C)
TRB Role:	Committee member(s) to serve on program committee Committee member(s) to organize or participate in session(s) Committee member(s) to review papers/abstracts.
TRB Staff Contact:	Bill Anderson

Cosponsored Conference Approval Form

Title:	Bridging Transportation Researchers (BTR) Conference #5
Location:	Online
Date:	August 10-11, 2023 (tentative)
Description:	BTR brings transportation engineers, planners, policymakers, and students together globally by removing the burden of travel (including travel-visa issues), the cost of registration, & greenhouse gases associated with transport & accommodations. The conference welcomes researchers and practitioners from diverse disciplines, to discuss a wide range of transportation research topics and results, including: - Multi-modal transportation network and systems - Travel demand forecasting, including connected, automated, and electric vehicles - Transportation economics, freight transport, and logistics - Travel survey methods, big data, and data acquisition and fusion - Traffic management and operations - Transportation safety and security - Environmental impacts and sustainability - Design and construction, and implementation and evaluation of transportation systems For more information, please visit the conference website at https://bridgingtransport.org/
Anticipated Attendees:	300+
Target Audience:	Transportation Planners, Engineers, policymakers, and students
Admission:	Open Registration
Anticipated Products:	Presentations, workshops, and papers
Convening Organization:	The University of Texas at Austin and UCLA Institute of Transportation Studies
Other Sponsors:	The Australian Road Research Board (ARRB), Chinese Overseas Transportation Association (COTA), The University of New South Wales, Sydney. and Research Center for Integrated Transport Innovation (rCITI)
Funding:	
TRB Standing Committees:	AEP50: Standing Committee on Transportation Demand Forecasting AEP25: Standing Committee on Travel Survey Methods AEP30: Standing Committee on Traveler Behavior and Values AEP35: Standing Committee on Effects of Information and Communication Technologies (ICT) on Travel Choices ACP30: Standing Committee on Vehicle-Highway Automation AME20: Standing committee on Women and Gender in Transportation

Cosponsored Conference Approval Form

	AP020: Standing Committee on Innovative Public Transportation Services and Technologies AP025: Standing Committee on Public Transportation Planning and Development AT015: Standing Committee on Freight Transportation Planning and Logistics
TRB Role:	Committee member(s) to serve on program committee Committee member(s) to organize or participate in session(s) Committee member(s) to review papers/abstracts.
TRB Staff Contact:	Anusha Jayasinghe

Cosponsored Conference Approval Form

Title:	14th Annual Maritime Risk Symposium
Location:	New York, NY, United States Maritime College - State University of New York
Date:	November 14-16, 2023
Description:	The 2023 Maritime Risk Symposium (MRS) will bring together government, industry, and academic leaders – both domestic and international – to explore current and future risks associated with the maritime transportation system. This one and a half-day program will specifically focus on the significant risks to managing offshore energy infrastructure impacts.
Anticipated Attendees:	100-125
Target Audience:	Academics, operators and local/state/federal authorities involved in the marine transportation system
Admission:	Open Registration
Anticipated Products:	Web postings of presentations
Convening Organization:	Maritime College - State University of New York
Other Sponsors:	U.S. Coast Guard
Funding:	
TRB Standing Committees:	Marine Board - MB000
TRB Role:	Committee member(s) to serve on program committee Committee member(s) to organize or participate in session(s) TRB staff to be invited speaker(s)
TRB Staff Contact:	Scott Brotemarkle

TRB Conferences, Webinars, and Recordings
July 14, 2022 –January 8, 2023

Conferences

(*indicates event cosponsored by TRB)

Advances in Materials and Pavement Performance Prediction
December 12-14, 2022
Hong Kong

Ruggedness Testing—Evaluating Asphalt Mixture Cracking Resistance
December 5, 2022

Maritime Risk Symposium
November 15, 2022
Online

Society of Naval Architects & Marine Engineers Maritime Convention
September 26, 2022
Houston, TX

International Conference of International Society for Intelligent Construction
September 6, 2022
Guimaraes, Portugal

Summerrail
August 16, 2022
Michigan City, IN

National Hydraulic Engineering Conference
August 16, 2022
Atlanta, GA

Bridging Transportation Researchers Online Conference
August 4, 2022

Climate Change Challenges International Transportation Webinars
July 27, 2022

Ghana Infrastructure Conference
July 25, 2022
Ghana

International Symposium on Transportation and Traffic Theory
July 24, 2022
Beijing, China

International Conference on Bridge Maintenance, Safety, and Management
July 11, 2022
Barcelona, Spain

International Conference on the Bearing Capacity of Roads, Railways, and Airfields*
July 28, 2022
Trondheim, Norway

6th International Symposium on Highway Geometric Design*
July 26, 2022
Amsterdam, the Netherlands

International Conference on Research in Air Transportation*
July 19, 2022
Tampa, FL

Webinars

TRB Webinar: Measuring and Managing Fare Evasion
December 15, 2022

TRB Webinar: Trends in Transit Ridership—Analysis, Causes, and Responses
December 13, 2022

TRB Webinar: Expanding Microtransit Services and Improving the Rider Experience
December 12, 2022

TRB Webinar: State DOTs Perspective on Pavement Resilience
November 30, 2022

TRB Webinar: Managing Severe Storms and Environmental Impacts
November 29, 2022

TRB Webinar: Legal Considerations of Renewable Energy Production in State Right-of-Way
November 22, 2022

TRB Webinar: Cybersecurity Trends in Transportation
November 17, 2022

TRB Webinar: T-1 Steel, I-40 Bridge, and the Way Forward
November 10, 2022

TRB Webinar: Enabling Automated Truck Inspection for Safety
November 9, 2022

TRB Webinar: Mitigating the Legal Risk of Data Collected at Airports
November 8, 2022

TRB Webinar: Six Minute Pitch: A Transportation Startup Challenge
November 3, 2022

TRB Webinar: Protocols for Macrotexture Measurement to Prevent Wet Weather Crashes
October 27, 2022

TRB Webinar: New Transit Fare Policy—Capping and "Cashless" Collection
October 26, 2022

TRB Webinar: Safer Intersections for Pedestrians and Bicyclists
October 25, 2022

Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions |Perspectives on Priority Actions for the Built Environment and Building Technologies RD&D Needs
October 20-21, 2022

TRB Webinar: Microtransit—Innovation in Rural Mobility
October 20, 2022

Current Methods for Life Cycle Analyses of Low-Carbon Transportation Fuels in the United States: Report Release Webinar
October 19, 2022

TRB Webinar: Preparing the Next Generation of Airport Industry Professionals
October 19, 2022

TRB Webinar: New Era in Data Analytics for Bridge Foundation Design
October 18, 2022

TRB Webinar: Withstanding Climate Change—Resilient & Flexible Pavement
October 12, 2022

TRB Webinar: Resistivity and Concrete Durability
October 11, 2022

TRB Webinar: Supply Chain Risk and Resilience—Linking Transportation and Economic Models
October 6, 2022

Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions: Local Benefits & Compensation Strategies for Deep Decarbonization Infrastructure
October 3, 2022

Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions/Public Engagement across the Transmission Development Lifecycle: from Planning to Permitting
September 30, 2022

TRB Webinar: Performance Measures for State Aviation Agencies
September 29, 2022

TRB Webinar: Pedestrian Analysis—Current Practice, Resources, and Applications
September 27, 2022

New Coast Guard Authorities Meeting #8
September 26-27, 2022

TRB Webinar: Strategies to Improve the Quality of Pavement Condition Data
September 22, 2022

TRB Webinar: Adaptive Flood Relief Techniques to Enhance Resiliency
September 21, 2022

TRB Webinar: Making the Research in Progress Database Work for You
September 19, 2022

TRB Webinar: Needs and Solutions for Automated Vehicle Infrastructure Implementation
September 15, 2022

Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions/The Role of Manufacturing in Industrial Decarbonization
September 9, 2022

TRB Webinar: Complete the Puzzles in Planning and Environmental Linkages Practice
August 30, 2022

Review of Federal Highway Administration Infrastructure R&D - Expert Task Group on Bridges
August 26, 2022

TRB Webinar: Considering Quality of Life in Transportation Planning and Development
August 25, 2022

TRB Webinar: Integrating Performance, Asset, and Risk Management is Value-Add
August 23, 2022

Public Briefing for the Report: Emerging Hazards in Commercial Aviation - Initial Assessment of Safety Data and Analysis Processes
August 18, 2022

TRB Webinar: Temporary Pavement Markings and Removal in Work Zones
August 16, 2022

TRB Webinar: Incorporating a Complex Transportation System in the New HCM7
August 3, 2022

Repurposing Plastics Waste in Infrastructure Information Gathering Session #6
July 29, 2022

TRB Webinar: Strings Attached—Permissible Uses of Airport Property and Revenue
July 26, 2022

TRB Webinar: Advances in Multiresolution Modeling for Traffic Analysis
July 25, 2022

TRB Webinar: Optimizing Unpaved Road Design with a Materials Blending Tool
July 21, 2022

Repurposing Plastics Waste in Infrastructure Information Gathering Session #5
July 20, 2022

TRB Webinar: Next Generation Information Systems for Transportation Projects
July 15, 2022

TRB Webinar: Evaluating Freeway and Arterial Connections in the New HCM7
July 14, 2022

Straight to Recordings

None since the last Executive Committee meeting.

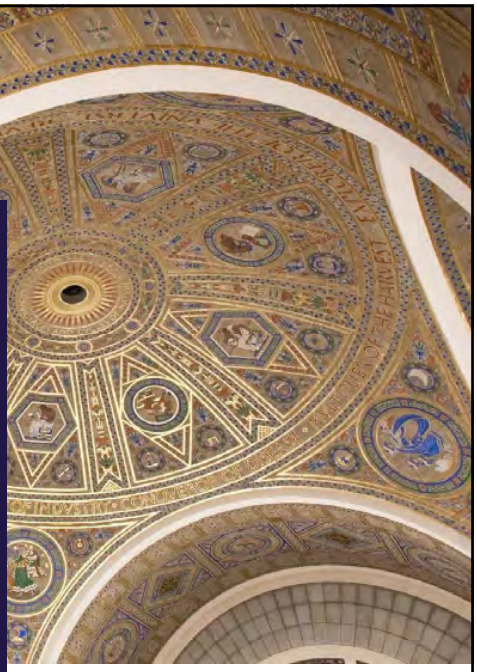
NATIONAL ACADEMIES Sciences Engineering Medicine

TRB TRANSPORTATION RESEARCH BOARD

TRB Executive Director's Priorities

Victoria Sheehan

January 11, 2023



1

Societal Goals

The overall purpose of our transportation system is to help **develop and support a thriving society**.

NATIONAL ACADEMIES Sciences Engineering Medicine

TRB TRANSPORTATION RESEARCH BOARD

2

EVERYONE INERESTED IS INVITED

3

3

TRB Vision

- A nation and a world that rely on scientific evidence and expertise about transportation to ensure a system that benefits individuals, society, and the environment.

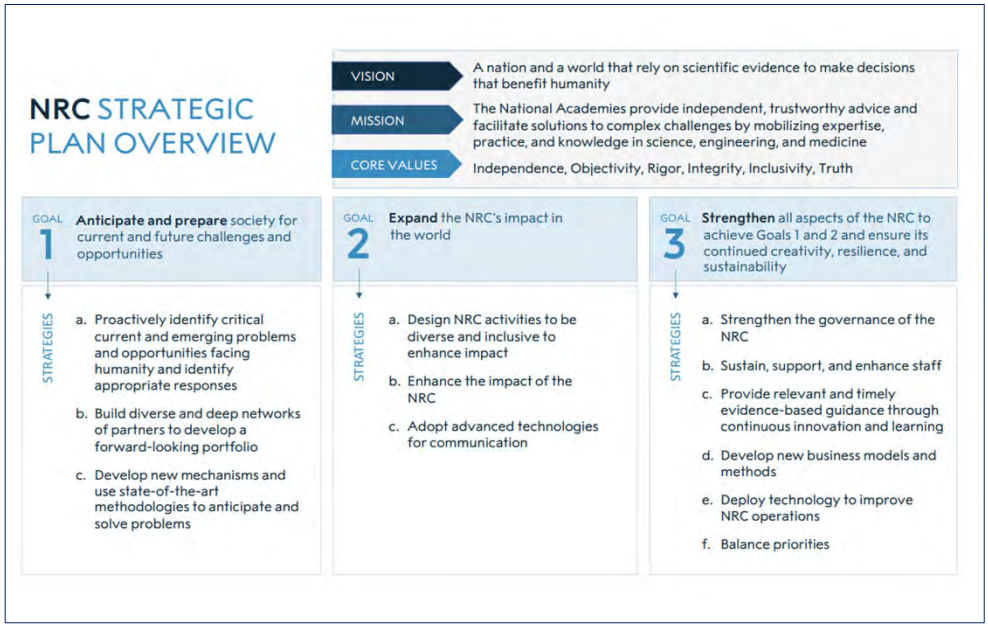
TRB Mission Statement

- TRB mobilizes expertise, experience, and knowledge to anticipate and solve complex transportation-related challenges.

NATIONAL ACADEMIES Sciences Engineering Medicine

TRB TRANSPORTATION RESEARCH BOARD 4

4



5

TRB Goals

1. Prepare transportation professionals and decision makers to address current and future transportation-related challenges and opportunities.
2. Expand TRB's impact and influence through its objective research, information exchange, and advisory activities.
3. Assure TRB's continued creativity, resilience, and sustainability in an ever evolving world.

6

6

NRC Goal 3

GOAL 3 **Strengthen** all aspects of the NRC to achieve Goals 1 and 2 and ensure its continued creativity, resilience, and sustainability

STRATEGIES

a. Strengthen the governance of the NRC

b. Sustain, support, and enhance staff

c. Provide relevant and timely evidence-based guidance through continuous innovation and learning

d. Develop new business models and methods

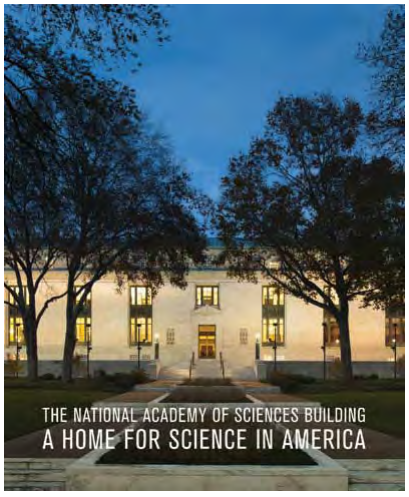
e. Deploy technology to improve NRC operations

f. Balance priorities

7

7

Guiding Tenents



1. Adhere to the National Academies' and TRB's high standards for objectivity, independence, non-partisanship, integrity, excellence, and an evidence-basis for all that we do;
2. Leverage being part of the National Academies of Sciences, Engineering, and Medicine, and the expertise available to TRB throughout the National Academies;

NATIONAL ACADEMIES Sciences Engineering Medicine

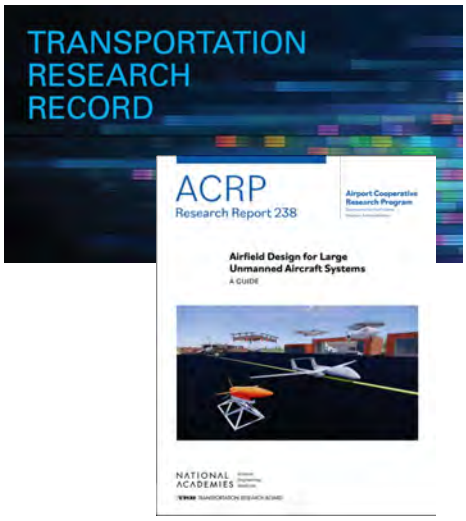
TRB TRANSPORTATION RESEARCH BOARD 8

8

Guiding Tenents

3. Facilitate researchers and practitioners interacting with and learning from each other;
4. Enable individuals and society to benefit from the multi-disciplinary and multi-modal expertise and contributions of TRB's participants, and the multi-disciplinary and multimodal scope of its portfolio;

Guiding Tenents



5. Meet the needs of TRB's sponsors and professionals working in transportation-related fields by offering relevant services and producing implementable strategies and useful, high quality products;
6. Facilitate the professional development and growth opportunities of students and transportation professionals at all stages of their careers;

Guiding Tenents

7. Continually evaluate and improve TRB's services to maximize value to TRB's sponsors and participants; and
8. Leverage diversity of thought, background, perspective, and experience to better address transportation's challenges; identify and eliminate barriers to full and active inclusion in TRB; and develop of a diverse set of TRB volunteer leaders.

Diversity, Equity, and Inclusion (DE&I) Strategic Plan

Mission

TRB's Diversity, Equity, and Inclusion (DE&I) Initiative's mission is to create and foster an inclusive environment that leads to increased diversity of participants in TRB and equitable outcomes for the transportation system.

Strategic Plan for TRB International Activities

Vision

TRB's International Activities facilitates actions that result in a safe, more secure, and sustainable global transportation system through bilateral and multilateral international engagement and collaborative research conducted through international cooperation.

Mission

The mission of the Subcommittee on International Activities of the TRB Executive Committee is to provide guidance and support on building and strengthening strategic international transportation partnerships, and leveraging TRB activities, committees, and publications to advance impactful transportation research and practice around the globe.

Expression of Gratitude

- Warm welcome – Entire TRB community, especially the Executive Committee, Committee Chairs, and Staff.
- Support from National Academies' leadership
- Ongoing resilience and adaptability of the TRB staff and volunteer leadership
- Continued commitment, dedication, and understanding of TRB's 8,500+ volunteers
- Financial support from TRB's sponsors, global affiliates, patrons, exhibitors, and individuals
- Wise counsel and guidance of the TRB volunteer leadership – including our latest volunteer, Neil.

Thank you!!

Table 1

TRB Spending by Program and Source(s) of Funds

	2020 act.	2021 act.	2022 est.	Source(s) of Funds
Core Technical Activities	$14,769,000	$14,049,000	$15,618,000	State DOTs (60%), Fees & Sales (22%), FHWA (10%), Other (8%)
Cooperative Research Programs				
NCHRP	$43,620,000	$40,463,000	$41,637,000	State DOTs (99.5%) FHWA (.5%)
ACRP	$12,503,000	$12,476,000	$13,333,000	FAA
TCRP	$5,327,000	$4,687,000	$5,160,000	FTA
NCFRP	$32,000	$0	$0	OST-R
BTSCRP	$1,163,000	$1,675,000	$1,974,000	NHTSA/GHSA
Rail Safety IDEA	$367,000	$223,000	$460,000	FRA
Evaluation of FHWA Research Projects	$791,000	$715,000	$978,000	FHWA
Policy Studies	$2,737,000	$2,611,000	$3,318,000	Coast Guard (26%), FAA (19%) PHMSA (17%), OST-R (16%), FHWA (6%), Policy Fund (5%), BSEE (2%), Other (8%)
Conferences, Workshops, Forums & Centennial	$1,401,000	$1,393,000	$1,893,000	Registration Fees/Core (72%), FHWA (8%),NHTSA (7%), State DOTs (7%), Other (6%)
SHRP2 (Safety Database)	$1,392,000	$0	$0	FHWA
Marine Board	$189,000	$345,000	$321,000	Army (28%), Coast Guard (19%), ONR (19%), NOAA (16%), BSEE (10%), MARAD (8%)
Total	$84,291,000	$78,637,000	$84,692,000	

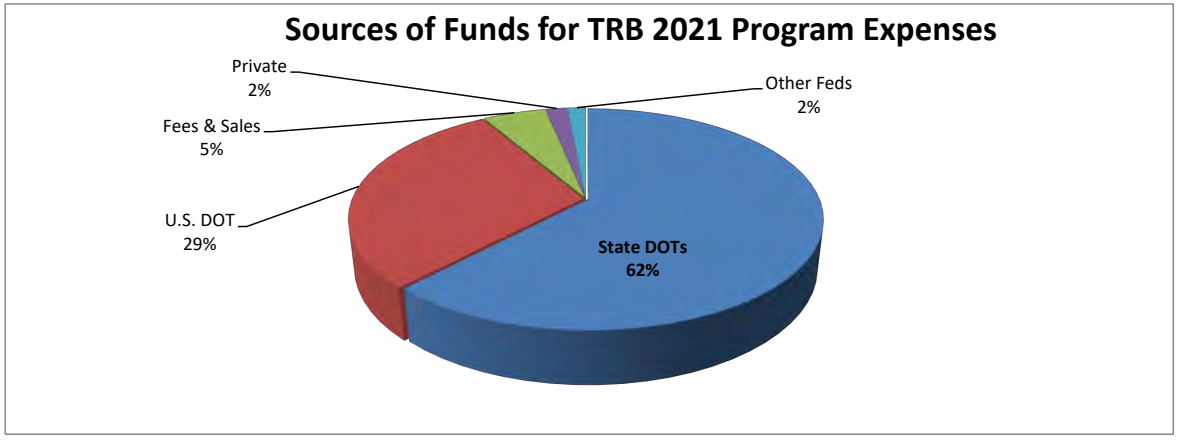


Table 2

TRB CORE BUDGET ESTIMATE FOR SIX FISCAL YEARS (July 1 - June 30)

	FY2022 (act)	FY2023	FY2024	FY2025	FY2026	FY2027
Revenue						
State Highway & Transportation Departments (State DOTs)	8,004,000	9,201,000	9,385,000	9,573,000	9,764,000	9,959,280
Federal Highway Administration (FHWA)	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000
Other Federal Agencies						
Office of the Assistant Secretary for Research and Technology (OST-R)	231,000	300,000	300,000	300,000	300,000	300,000
Federal Transit Administration (FTA)	312,000	250,000	250,000	250,000	250,000	250,000
National Highway Traffic Safety Administration (NHTSA)	222,000	250,000	250,000	250,000	250,000	250,000
Federal Motor Carrier Safety Administration (FMCSA)	63,000	77,000	79,000	81,000	83,000	85,000
Federal Aviation Administration (FAA)	69,000	77,000	79,000	81,000	83,000	85,000
Federal Railroad Administration (FRA)	69,000	77,000	79,000	81,000	83,000	85,000
Pipeline and Hazardous Materials Safety Administration (PHMSA)	57,000	77,000	79,000	81,000	83,000	85,000
USDOT Office of the Under Secretary for Policy	38,000	77,000	79,000	81,000	83,000	85,000
Department of The Interior (DOI)	85,000	85,000	85,000	85,000	85,000	85,000
Air Force Civil Engineer Center (AFCEC)	76,000	-	-	-	-	-
Department of Energy (DOE)	76,000	77,000	79,000	81,000	83,000	85,000
Environmental Protection Agency (EPA)	76,000	77,000	79,000	81,000	83,000	85,000
Army Corps of Engineers (COE)	76,000	77,000	79,000	81,000	83,000	85,000
	1,450,000	1,501,000	1,517,000	1,533,000	1,549,000	1,650,000
Other Non-Federal						
Association of American Railroads (AAR)	76,000	77,000	79,000	81,000	83,000	85,000
American Public Transportation Association (APTA)	76,000	77,000	79,000	81,000	83,000	85,000
California Air Resources Board (CARB)	81,000	82,000	84,000	86,000	88,000	90,000
	233,000	236,000	242,000	248,000	254,000	260,000
TRB Fees & Sales	4,675,000	6,175,000	6,360,000	6,551,000	6,748,000	6,950,000
	15,762,000	**18,513,000**	**18,904,000**	**19,305,000**	**19,715,000**	**20,219,280**
Expenses						
Personnel Related Expenses	12,002,000	13,120,000	14,595,000	15,344,000	15,958,000	16,596,000
AM Logistics and Travel	1,968,000	2,355,000	2,502,000	2,577,000	2,654,000	2,734,000
Library, Publishing & Report Production	1,008,000	1,213,000	1,249,000	1,286,000	1,325,000	1,365,000
Staff/Committee Travel & Meetings	73,000	200,000	285,000	294,000	303,000	312,000
Other Costs	75,000	190,000	215,000	221,000	228,000	235,000
	15,126,000	**17,078,000**	**18,846,000**	**19,722,000**	**20,468,000**	**21,242,000**
Reserves						
Yearly Surplus/(Deficit)	636,000	1,435,000	58,000	(417,000)	(753,000)	(1,022,720)
Reserve Fund Balance	19,996,869	21,431,869	21,489,869	21,072,869	20,319,869	19,297,149
Percent of Core Operating Year	**132%**	**125%**	**114%**	**107%**	**99%**	**91%**

TRB STRATEGIC PLAN IMPLEMENTATION STATUS UPDATE

December 20, 2022

Note: this is an interim report on progress on implementation of the TRB strategic plan. Since TRB is only six months into the five-year plan, there are number of items that are either underway or are future items. A short status is provided for each of the action items under the goals and strategies contained in the TRB strategic plan.

1. Prepare transportation professionals and decision makers to address current and future transportation-related challenges and opportunities.
    a. Identify current and future critical transportation-related issues and address these issues through TRB's convening, research, and advising programs and activities.
        1. Publish a new edition of *Critical Issues in Transportation* that addresses how transportation supports broader societal goals. On schedule to issue a new edition in spring 2023.
        2. Develop and highlight TRB Annual Meeting sessions related to the critical issues. Numerous sessions on critical issue topics have been developed for the 2023 TRB Annual Meeting. Curated programs have been developed for the following critical issue topic areas:
            - Climate Change and Resilience Sessions *(68 sessions)*
            - Economic Competitiveness and Travel Demand Sessions *(39 sessions)*
            - Equity Sessions *(33 sessions)*
            - Funding, Financing and Governance Sessions (includes legal and international sessions) *(37 sessions)*
            - Physical Infrastructure Sessions *(40 sessions—just a sample of relevant sessions)*
            - Safety and Public Health Sessions *(46 sessions—just a sample on the safety side)*
            - Technology Sessions: 3 curated programs focused on
                - automation and electrification in all modes *(39 session)*
                - artificial intelligence, big data *(28 sessions)*
                - on-demand and other mobility tech *(17 sessions)*
            - Workforce Sessions (includes sessions focused on or conducted by students and young professionals) *(31 sessions)*

        3. Pursue sponsorship of conferences/workshops for the critical issues. Patrons were secured for the Automated Vehicle Symposium, TRANSED: Mobility, Accessibility & Demand Response Transportation

Conference, and the Scenario Planning in Transportation Conference. Each of these conferences addressed critical issue topics.

4. Conduct research projects on the critical issues and disseminate the findings to key stakeholders. A list of Cooperative Research Program research projects selected for each critical issue topic areas is contained in Table 1.
5. Pursue sponsorship of consensus and advisory studies for critical issues, including working together with other National Academies program divisions on studies addressing these issues. A list of consensus studies started or underway in 2022 by critical issue topic area is contained in Table 2.
6. Produce webinars that address critical issues. A list of webinars produced in 2022 by critical issue topic area is contained in Table 3.
7. Produce Executive Committee policy sessions that address critical issues. The June 2022 session was on goods movement, which falls under the "Economic and Global Competitiveness" critical issue topic area. The January 2023 session is on megaprojects, which falls under the topic area of "Physical Infrastructure."
8. Develop addenda to the *Critical Issues in Transportation* report as new or evolving issues develop between reports. No new addenda were produced in 2022. Addenda on COVID19 and on racial equity were published in 2021.
9. Monitor and publicize research done by others, including international research, on critical issues. This is done through TRID. Critical issue topics are featured on TRID. A list of examples is provided in Table 4. Research by other organizations on critical issues is also highlighted in the *TRB Weekly* e-newsletter.
10. Develop and market TRID snap searches for critical issue topics. TRB's library staff perform TRID snap searches, which are then featured both on TRID and in the TRB Weekly newsletter. A list of examples is provided in Table 4.

b. Educate and communicate with transportation professionals, decision makers, and the public about the critical issues identified and the work that TRB is doing to address them.
    1. Develop strategies for communicating within the TRB stakeholder community about critical issue topic areas through e-newsletter articles, *TR News* feature editions, blogs, podcasts, and TRID feature articles. Strategies to feature Critical Issue related topics in all these communications channels have been adopted. A list of TRID feature articles is provided in Table 4. A list of *TR News* articles on Critical Issue

topics is provided in Table 5. Examples from other communications channels are contained in Table 6.

2. Develop communications strategies for individual reports and activities related to TRB's critical issues, including Cooperative Research Program reports, consensus study reports, topical *Transportation Research Record* editions, conference/workshop reports, and TRID snap searches on the topics, as contained in the TRB Communications Strategic Plan. As contained in the TRB Communications Strategic Plan, Critical Issue topics have been featured in all these publications, as documented in Tables 1-6.
3. Address critical issues in collaboration with other transportation organizations, including international organizations. TRB co-sponsored 22 conferences in 2022, all of which addressed topics related to the Critical Issue topic areas, with many of the conferences addressing multiple critical issue topics.
4. Develop strategies for communicating with the broader public and decision makers about critical issue topic areas, as well as specific reports on these topic areas. Strategies were developed for communicating the key results of individual reports related to the Critical Issues topic areas (see Tables 1 and 2 for a list of reports). Blogs and podcasts were developed for topic areas as listed in Table 6.
5. Feature *Transportation Research Record* papers (e.g., special editions) on critical issues. TRB has discontinued the publication of themed *Transportation Research Records*, but a very large portion of the papers published in 2022 were on subjects related to the Critical Issue topic areas. TRR has recently published special collections on COVID-19 and transportation; Freight Transportation Automation, Logistics, and Supply Chains; Gender Issues; and Equity. Two equity-related special collections are scheduled for 2023: Sustainable Transportation for Equitable, Efficient, and Resilient Infrastructure in the Global South and Transport for Inclusive Societies.

c. Identify state-of-the-art methods and data for addressing critical issues.
    1. Find opportunities to use data that has been collected or will be collected using state of the art data collection methods (e.g., crowdsourced data, cell phone probe data), as well as state of the art analysis methods (e.g., artificial intelligence, advanced geographic information systems). Future action item.

2. Expand TRB's national and international impact and influence by advancing knowledge, sharing lessons learned, and impacting policy through its objective research, information exchange, and advisory activities.
    a. In planning TRB activities, identify actions that will expand each activity's impact.
        1. As part of initial planning for conferences/workshops, cooperative research studies, and consensus studies, develop a communications and outreach approach for when reports are issued, including measures to gauge impact. Communications plans are being developed for individual consensus study reports and selective Cooperative Research Program reports in advance of their release. Measures to gauge impact to date have been developed after individual reports have been issued. TRB needs to do more advanced planning on appropriate impact measures.
        2. Develop and deploy communications strategies to increase awareness of and participation in the TRB Annual Meeting, conferences, workshops, and committee meetings. Communications plans were developed for the 2023 TRB Annual Meeting, the Automated Road Transportation Symposium (ARTS), and the TRANSED: Mobility, Accessibility & Demand Response Transportation Conference. Publicity has occurred for other conferences, workshops and committee meetings, but more will need to be done in the future.

    b. Measure the impact of TRB's programs and activities
        1. Develop both quantitative and qualitative performance metrics to measure the impact of TRB's convening activities, research studies and reports, TRB's consensus study reports, *Transportation Research Record,* TRID database, and communications efforts. Metrics currently are reported for Cooperative Research Program reports and for the *Transportation Research Record*. Selective pages form the impact reports for CRP programs is shown in Figure 1. Since 2018, the TRR impact factor (a measure of citations in current academic research) has risen from 0.695 to 2.019, after years of little growth. In the past year, TRR articles were cited 218 times in patent applications and 190 times in policy documents, as well as over 400 times by the news media. TRB also surveys TRB Annual Meeting attendees, including obtaining impact information from attendees.
        2. Collect data and anecdotal information from users and sponsors on the short- and long-term impact of selected reports. Data and anecdotal information are collected for Cooperative Research Program reports and included in CRP annual reports (see Figure 1).

3. Summarize impact data in TRB's annual report and in periodic reports for individual TRB programs. This has been done in the TRB Annual Report and in the Cooperative Research Program annual reports.
4. Working with oversight committees for each program area, adjust the program to focus on areas of greatest value and impact for TRB sponsors and stakeholders. These discussions take place in oversight committee meetings for each of the TRB programs, and appropriate revisions are made based on the discussions in these meetings.
5. Survey members of key stakeholder groups to determine familiarity and satisfaction with TRB products and services and to understand how and the extent to which the products and services are being used by different audiences. This is a future activity.
6. Conduct an engagement survey of members of TRB standing committees, Cooperative Research Program research panels, and consensus study committees to evaluate their volunteer experience. Employ these data to improve volunteer outcomes. This is a future activity.

c. Educate transportation stakeholders about TRB's programs, products, and activities.
    1. Using impact information collected, develop and communicate value proposition statements for each of TRB's programs and major activities. Value proposition statements have been developed for TRB overall and for a few selective TRB activities. They will continue to be refined as more information becomes available and new value propositions statements will continue to be developed.
    2. Refine materials that describe TRB's programs, products, and activities, tailoring them to specific target audiences, as well as diverse audiences. Continual updates and refinements are being made to descriptive and promotional materials, including handouts, the TRB website, and exhibit and social media materials.
    3. Reach out to targeted audiences to educate and engage in dialogue with them about TRB, and how TRB can be of benefit to them. The Executive Director and senior staff regularly participated in these types of outreach activities both virtually and in person throughout 2022.
    4. Develop communications materials and strategies about TRB's capabilities and value proposition for the following specific audiences:
        - Sponsors,
        - Congressional staff,

- Transportation professionals and organizations from nations other than the United States, and
- Young professionals and students.

Targeted materials for each of these groups will be developed in the future.

5. Equip TRB staff and volunteers and MOU partners to be ambassadors for TRB's programs, products, and activities. TCRP and ACRP have "Ambassador" programs. Additional ambassador programs will be considered in the future. The National Academies put together materials for consensus report volunteers: https://www.nationalacademies.org/about/volunteers
6. Adapt TRB's communications strategies to rapidly changing communications methods and different groups of stakeholders. Communications strategies will evolve as new methods become available. Tailored communications strategies are being developed for target audiences.
7. Strengthen and evolve the marketing strategy for the TRB Annual Meeting. A communications plan was developed for the 2023 TRB Annual Meeting. Future efforts will focus on marketing in addition to communications.

d. Communicate with transportation professionals and the public about transportation issues and research.
    1. Develop timely communications materials on transportation-related issues and share through blogs, social media, and other communications methods. A list of blogs, podcasts, and social media blasts on specific topics is included in Table 6.
    2. Develop materials that demonstrate the value obtained from transportation research. Information from Louisiana DOTD was used for an exhibit developed for the AASHTO Annual Meeting. More work will be done on this in the future.

e. To enhance impact, build a diverse and deep network of partners.
    1. Identify a list of international and domestic organizations that TRB will engage with, publicize each other's activities, and as appropriate establish liaisons between the organizations' committees. The International Subcommittee and the Special Committee on Diversity, Equity, and Inclusion will facilitate engagement with international and

minority-serving organizations. A list of the international and minority serving organizations with which TRB is doing these activities is included in Table 7. In addition, *Transportation Research Record* research is freely available to over 7,000 institutions in developing countries, as part of the Research4Life consortium.

2. Pursue joint activities with these organizations. The International Subcommittee and Special Committee on DE&I have documented these activities in their reports for the Executive Committee for their January meeting.

f. Ensure multidisciplinary involvement in addressing TRB's issues.
    1. Identify disciplines or sectors involved in transportation-related issues that are underrepresented in TRB and develop strategies to engage with professionals from these disciplines or sectors. This is an ongoing activity; it will receive even more focus in future years. Some disciplines and sectors for future focus include social sciences, public health, aviation, technology companies, and logistics.
    2. For individual standing technical committees, research panels, or study committees, ensure that membership reflects an appropriate diversity of disciplines. The Technical Activities Council and TRB staff emphasize this to TRB committee chairs. CRP staff try to ensure this on CRP research panels. Diversity of disciplines is required for consensus studies.

g. Provide career-long learning opportunities by fostering an environment that continually enhances the diversity, inclusivity, skills, and capacity of the transportation professional community.
    1. Develop appropriate communications and resource materials and convey the benefits of standing committee volunteer opportunities to enhance professional development and encourage pathways for diverse groups to become actively engaged and take on leadership roles in TRB. Materials and digital communications have been developed but will continue to be refined and evolve.
    2. Develop and deliver targeted communications materials for students, early career professionals, and underrepresented groups focused on learning and professional development opportunities through TRB. TRB created a brochure targeted at students and young professionals that was available at the Welcome Session of the TRB Annual Meeting. TRB

communications staff will work with the Young Members Council on developing additional materials and strategies.

3. Enhance marketing of TRB's continuing education credit program. This is a future activity.

3. Assure TRB's continued creativity, resilience, and sustainability in an ever-evolving world.
    a. Identify and address the issues and needs of existing and potential sponsors, partners, volunteers, and users of TRB's programs, products, and activities.
        1. Conduct regular outreach meetings with sponsors to discuss their challenges and opportunities for TRB to assist in addressing their issues. TRB conducts state visits and meetings with AASHTO committees to solicit information on needs of state DOTs. It holds regular meetings with federal sponsors and other transportation-related associations to discuss their major issues.
        2. Periodically survey participants in TRB events and webinars, and make appropriate adjustments based on feedback received. Surveys are conducted of participants in TRB conferences, including the TRB Annual Meeting, and of webinar attendees, and this information is used to make adjustments for future conferences.
        3. Seek feedback regarding TRB reports, the TRB website, and e-newsletter to identify potential areas for improvement. TRB interviews sponsors of consensus study reports after the report has been issued to solicit feedback. Periodic surveys are conducted of website and e-newsletter users.

    b. Pursue continuous improvements and efficiencies in TRB programs, products, and activities to increase effectiveness, usefulness, quality, and timeliness and to identify how to best use new resources.
        1. Continually evaluate TRB's programs and activities to ensure that they are being delivered as efficiently and effectively as possible. TRB staff continually assess how programs and activities can be improved and they discuss major changes with appropriate TRB oversight committees.
        2. Conduct reviews of key processes to identify improvements, opportunities for consistency or standardization, and efficiencies. Both the Technical Activities Division and Cooperative Research Program Division have undertaken major process changes in response to comprehensive reviews of their programs. TRB participates in reviews

of the consensus study process by the National Research Council leadership.

3. Implement IT changes that can improve efficiencies or effectiveness. The Cooperative Research Program has implemented a comprehensive project management system and adopted TRB's membership management system. The Technical Activities Division has adopted new conference management and paper review IT systems. The National Academies has a major initiative underway to upgrade several of the Academies-wide IT systems, which will help TRB in its efforts to gain IT-related efficiencies.
4. In conjunction with National Academies initiatives, implement improved project management systems in TRB. The National Academies is implementing the Asana project management system on a pilot basis for use in consensus studies and other activities that would benefit from a project management system. TRB has participated in the pilot and is looking at other activities that would benefit from use of the Asana project management system. The Cooperative Research Program, which has much more complex project management requirements has implemented the Workfront project management system.
5. Work with oversight committees to determine the most effective way to use additional funding from the Bipartisan Infrastructure Law. Meetings have been held with each of the Cooperative Research Program oversight committees to determine how to program the additional funding. A meeting was held with the Technical Activities Council in which a discussion took place regarding the increased level of technical activities that are taking place as a result of the increased funding.
6. Initiate the new Freight Cooperative Research Program. TRB is in discussions with USDOT regarding identifying funding for the Freight Cooperative Research Program. Until USDOT has funding in place, the program is not able to begin.
7. Coordinate with TRB sponsors to determine additional activities where TRB could help support the sponsor agency, if appropriate financial support is provided. Continual discussions take place with federal sponsors regarding potential additional activities where TRB assistance would be of value.
8. Work with NRC leadership and other program division staff on new NRC products or services emerging from the NRC strategic plan. TRB will continue to participate in discussions with NRC leadership on potential new NRC products and services.

9. Obtain feedback from sponsors, Report Review Committee Chairs, and users of TRB reports, webinars, and convening activities regarding the quality of TRB's products and services. Regular discussions take place with TRB sponsors to obtain feedback. The Report Review Committee chairs provide feedback regarding the quality of TRB reports that undergo the RRC report review process. Surveys are used to obtain feedback from users of TRB reports and activities.

c. Employ technology to expand TRB's outreach and participation.
   1. Take advantage of videoconference technology to support TRB activities, as appropriate. Many of TRB's meetings are being held virtually or as hybrid meetings. Some of TRB's conferences are being held virtually, but most participants have indicated that they prefer in person conferences.
   2. Increase participation on TRB's social media platforms. Participation in all of TRB's social media platforms continues to increase. The following are changes in the number of followers from the end of 2021 to mid-December 2022:

LinkedIn	13,646 - 17,554
Twitter	24,800 - 25,118
Facebook	9,767 - 9,810

   3. Develop products that best meet sponsor and stakeholder needs, including digital formats as appropriate. TRB is producing more digital products as part of its research programs but must be careful not to produce products that require updating and maintenance without funding being identified or another party taking over ownership responsibility.
   4. Use state of the art collaboration tools for committee and panel work. Each of TRB's program divisions have been using IT tools that permit collaborative product development as well as report reviews. The National Academies is about to implement Microsoft 365, and TRB will be more fully taking advantage of several of its collaborative tools.

d. Engage with and involve new participants in TRB activities
   1. Identify targeted groups or disciplines that are underrepresented in TRB activities. TRB has identified underrepresented minorities, females, persons with disabilities and representatives from technology

companies and modes other than highways and transit as areas to focus on increasing participation.

2. Develop marketing materials and strategies for these groups. Developing targeted marketing materials for each of these groups will be an upcoming activity.
3. Develop strategies to engage new attendees at the TRB Annual Meeting and following the event. TRB does some of this through the New Attendees event and follow up from that event. Additional thought will be put into what more can be done.

e. Balance TRB's programs, products, and activities with available financial, volunteer, and staff resources to achieve the goals and strategies in this plan.
    1. Annually adjust the amount of activity in each program area to be in balance with the financial support made available to that TRB program area while meeting the needs of core constituencies. This is done annually as part of the budget setting process for each of TRB's programs. The increased funding as a result of the Bipartisan Infrastructure Law has been programmed.
    2. Ensure that financial resources made available are programmed and deployed in a timely manner. See above. The biggest challenge now is recruiting to fill positions to accomplish the additional work.
    3. Keep expenditures as close to budget allocations as possible. Expenditures are reviewed on a monthly basis. TRB has been able to consistently keep staff expenditures within a few percent of budget. Contractor expenditures have fluctuated but are catching up from reductions during the pandemic.
    4. Use information developed on the use and impact of TRB's programs, products, and activities to make adjustments that ensure that the greatest value is provided for the resources that are made available. This is regularly done with data from National Academies Press, who maintain data on access to TRB reports. Information from Cooperative Research program impact reports is also used to inform program activities, as is communications data for website, social media, and e-newsletter usage.
    5. Evaluate the effectiveness of TRB's Global Affiliate and Individual Affiliate programs. Data for both programs are tracked. Feedback is continually solicited from Global Affiliates and a meeting is held each

January with Sustaining Global Affiliates to solicit feedback about the program.

a. Evaluate the package of private sector support opportunities for the TRB Annual Meeting (i.e., patron programs, exhibits, advertising). A third-party review of TRB's advertising opportunities was recently completed. Although a review of current programs is done on an ongoing basis, a more comprehensive future review is warranted.

6. Identify and pursue additional sponsors, affiliates, and other support opportunities for TRB programs, products, and activities. This is done on an ongoing basis.
7. Make TRB's conferences and workshops self-supporting through sponsorships, exhibit sales, and registration revenues, including potential pool-fund arrangements. TRB has been making progress on this issue, but staff time is not yet fully covered through sponsorships, exhibit sales, and registration revenues for most conferences.
8. Identify additional organizations that are willing to provide funds for Cooperative Research Program (CRP) research projects or self-funded TRB consensus studies. FHWA provided funding for several additional activities done through the Cooperative Research Program. The Centers for Disease Control has funded an ACRP project on Communicable Disease Response Plan Evaluation. Additional opportunities will continue to be pursued.
9. Train staff to assist in fundraising activities for specific programs and activities. This is a future activity.
10. Expand TRB's programs and activities to address new and future transportation issues as opportunities arise, provided financial and staff resources can be secured. This is a future activity.

f. Expand the diversity of TRB participants, ensuring an inclusive and welcoming environment for all persons involved in transportation.

1. Develop guidance materials and training for committee chairs and TRB staff to identify, recruit, and welcome diverse candidates for TRB committees and research panels. This has been done, but guidance materials and training will continue to be refined and updated.
2. Work with minority-serving organizations to market TRB and opportunities for their members to be involved in TRB. TRB has been proactively pursuing activities with COMTO, Latinos in Transit, and the Airport Minority Advisory Council to encourage their members to become more involved in TRB.

3. Identify ways to ensure that TRB Annual Meeting and specialty conference attendees have equal opportunities to make connections and feel included, welcomed, and able to participate. This issue is emphasized in communications with committee chairs, especially for committee meetings.
4. Identify practices/and develop primers for TRB staff and the contracting office to identify and minimize barriers to achieving greater diversity among TRB contractors and their lead staff, whether they are suppliers or research consultants. TRB staff will work together with the National Academies Office of Diversity and Inclusion on a NASEM-wide effort on this issue. TRB, did a webinar entitled "Evaluating Goals Under the Disadvantaged Business Enterprise Program."
5. Improve existing data, information, and communication mechanisms to support diversity efforts. The National Academies has changed the definitions used for minority and gender classifications. TRB is working to get as many volunteers as possible to update their data. Reports on diversity data are produced at the end of the year. Targeted communications and marketing materials for different underrepresented groups will be developed in the future.

g. Sustain, support, and enhance staff.
    1. Enhance methods used in recruiting and hiring candidates to fill staff vacancies. TRB is working with the National Academies Office of Human Resources to use new and different methods for identifying and recruiting prospective employees, including the use of specialized recruitment contractors.
    2. Improve the onboarding experience for new employees. TRB's HR Manager is working with a TRB team to identify improvements to the onboarding experience for new TRB employees. This has been a particular challenge during the pandemic.
    3. Review training programs for employees in different job classes and develop more structure to employee training programs within each TRB division. This is a future activity.
    4. Develop career advancement strategies for staff. This is a future activity, although it is being considered as reorganizations are taking place.
    5. Review and refine TRB's mentoring programs for staff. This is being looked at in conjunction with the effort to make improvements to the onboarding experience for new employees. TRB is also working with

the National Academies Office of Diversity and Inclusion on revisions to NASEM-wide mentoring programs.

6. Review and revise process-related guidance materials for staff. This is underway as part of the process improvements that have been taking place, but more needs to be done in the future.
7. Review and revise TRB's rewards and recognition program. TRB's HR Manager is working with a TRB team to identify revisions to TRB's rewards and recognition program.

Cooperative Research Program Projects Selected in 2022 by Critical Issue Topic Area

Critical Issues Topic	Program	Project no.	Project Title
Safety	ACRP	03-69	03-69, Identifying Congestion and Safety Risks Due to Heterogeneous Airport Curbside Activity and Remedial Solutions (PS 945)
	NCHRP	05-26	Development of an Updated Warranting System for Roadway Lighting
		05-27	Best Practices for Roundabout and Alternative Intersection/Interchange Lighting
		07-33	Evaluate the Benefits of Increasing Clear Zone at Higher Speed/Traffic Volume/Crash Locations
		08-171	Institutionalizing Safe Systems and Safety Culture in the Transportation Planning Process
		15-82	Effects of Operating Speed and Posted Speed Limit in Conjunction with Roadway Geometric Design on Safety Performance for High-Speed Rural Highways and Freeways
		17-111	Speed Management Solutions and Strategies to Improve Pedestrian and Bicyclist Safety on Arterial Roadways
		17-112	Enhancing Highway Safety Manual Guidance on Pedestrian and Bicyclist Countermeasures (CMF/SPF Development)
		17-113	Incorporating Safe System Approach into the NCHRP 500 Series
		17-114	Integrated Strategies for Managing High Travel Speeds
		17-115	Pedestrian Crosswalk Spacing and Placement Guidance to Improve Safety
		17-116	Practical Approaches to Quantifying Safe System Concepts
		17-117	Safety Performance Functions for Horizontal Curves
		17-118	Understanding the Impacts of Operational Changes on Safety Performance
		17-119	Conflict-Based Crash Prediction Method for Intersections
		17-120	Improved Method to Link Crash, Emergency Medical Service, and Trauma Registry Data to Expand Safety Data Analyses and Safety Program Development
		17-122	Evaluation of Trespassing Detection and Warning Systems in the Vicinity of Highway-Rail Grade Crossings
		22-57	Development of MASH Full-Scale Test Matrices for Additional Roadside Safety Devices
		22-58	National Guidance for Defining Acceptable Roadside Hardware Field Performance through In-Service Performance Evaluations (ISPEs)
		20-24(145)	Harnessing the Safe System Approach to Meaningfully Improve Traffic Safety
Climate Change	NCHRP	01-62	Impact of Flooding and Inundation on the Resiliency of Pavements
		23-33	Guidance in Planning for Managed Retreat as an Extreme Weather and Climate Adaptation Strategy
		25-68	Successful Practices in Tracking and Implementing Environmental Commitments
Public Health	ACRP	02-103	Scan of Technologies to Remove Residual PFAS from Airport Firefighting Equipment
		03-73	Best Practices in Transitioning to Lead-Free AvGas
		04-31	Providing Adequate and Balanced Trainer Facilities for Required and Recurrent Training for Airport Firefighters
		04-32	Guidance in Using Existing and Emerging Technologies to Identify and Mitigate Human Trafficking in Airports
	TCRP	A-50	Practical Considerations for Developing Transition Plans to Zero-Emission Fleets
		E-15	COVID-19 and Transit Air Quality Protections
	NCHRP	08-163	Defining Appropriate Design and Accommodation Thresholds for Active Transportation in a Context-Driven Approach
		08-164	Institutional Integration of Active Transportation
		08-165	Integrating Active Transportation Data into Transportation Decision-Making
		08-172	Benefit Analysis of Private Health Sector Investments in Public/Human Transportation
Equity	TCRP	B-51	Floating Transit Stops and Passengers with Vision Disabilities

Cooperative Research Program Projects Selected in 2022 by Critical Issue Topic Area

		b-53	Planning for the Travel Needs of Women
		D-23	Guidebook for Planning and Constructing a Small and Rural Tribal Transit Facility
		J-11/47	Affordable Housing and Transit
	NCHRP	08-166	Racial and Economic Disparities in Pedestrian and Bicyclist Safety
		08-169	EDI (Equity, Diversity, and Inclusion) and Other Indicators to Improve TAM Impact and Outcomes
		19-23	New Mobility and the User Fee Concept
		20-24(146)	Guide to Supporting and Sustaining Transportation Grant Programs for Local Governments and Tribes
		20-24(147)	Peer Exchange and Research to Identify Best Practices for Testing, Monitoring and Deployment of Automated Transportation Solutions to Support Safety, Equity and Operational Efficiency
Economic and Global Competitiveness	NCHRP	08-168	Analysis and Assessment of the National Performance Management Data
		20-68D/Scan 23-01	Validating and communicating the long-term effects of aging Government Fleet Asset
Financing and Government	NCHRP	10-122	Update of the AASHTO Practical Guide to Cost Estimating (PGCE)
		10-123	Quality Assurance and Sustainability
		19-22	Future Equity Impacts of Existing Fuel Taxes
		20-24(144)	Agile Project Delivery in Multi-Modal Transportation
Workforce	ACRP	06-09	Quantifying and Understanding Women and Miniority Airport Employee Populations to Track Progress
	TCRP	F-31	Modernizing Transit Station Staffing Management
Technology	ACRP	03-70	Incorporating Emerging Technologies into Airport In-Terminal Concession Programs
		03-71	Guidance for Planning for Future Electric Vehicle Growth at Airports
		03-72	Economic Impact of E-Commerce on Airport Industry
		07-21	Understanding Opportunities with Deploying Private Wireless Network at Airports
	TCRP	A-51	Innovative Practices for Technology Implementation at Rural, Small, and Mid-Sized Transit Agencies
	NCHRP	03-145	National Traffic Sensor System Evaluation Program
		03-147	LED Applications on Traffic Control Devices
		08-167	A Guide for Creating Effective Visualizations
		17-121	Using Advanced Technologies to Reduce Commercial Motor Vehicle Crashes in Work Zones
Physical Infrastructure	NCHRP	08-170	Ex Post Project Evaluation: Frameworks, Guidance and Tools to Support Post-Implementation Evaluation of Transportation Projects
		10-115	Guidebook on Progressive Design-Build for Transportation Projects: Project Planning through Project Implementation
		10-116	Variability in Pavement Materials and Construction
		10-117	GFRP Barrier Testing Evaluation and Repair Strategies
		10-118	Guidance for Efficient Timelines and Incentives/Disincentives for Accelerated Bridge Construction Projects
		10-119	Guidance for Implementing Utility Investigations in Alignment with Project Delivery
		10-120	Guidance for Including Right-Of-Way and Utilities in Value Engineering Studies
		10-121	Performance-based Specification for the Application of Ground Modification Methods for Bridges, Retaining Structures, and Associated Geotechnical Features
		10-124	Development of Field Test to Determine Actual Percent Embedment of Chip Seal Aggregate
		10-125	Update to the AASHTO LRFD Bridge Construction Specifications

Cooperative Research Program Projects Selected in 2022 by Critical Issue Topic Area

		12-125	Earthquake-Induced Bridge Displacements
Travel Demand	NCHRP	03-146	Transportation Operations Manual Best Practices Guide
		08-173	Impacts of E-Commerce on Travel and Land Use Patterns
		03-148	Capabilities, Requirements, Planning, and Preparing to Virtually Operate Traffic Management Systems (TMS).
	ACRP	03-74	ACRP WebResource to Support Research into Air Traveler Choice Models

Table 2

2022 New and Ongoing Consensus Studies and Collaborations by Critical Issues in Transportation Topics

Safety

Emerging Trends in Aviation Safety

Impacts of Alternative Compensation Methods on Truck Driver Retention and Safety Performance

Improving the Efficiency and Effectiveness of the Coast Guard Certificate of Compliance Examination Program for Gas Carriers

Criteria for Installing Automatic and Remote-Controlled Shutoff Valves on Existing Gas and Hazardous Liquid Transmission Pipelines

Transitioning Evidence-based Road Safety Research into Practice

Impacts of Trains Longer than 7,500 Feet

Climate Change

Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions

Public Heath

Study and Recommendations on the HIMS, FADAP, and Other Drug and Alcohol Programs within the USDOT

Equity

Data, Metrics, and Analytic Methods for Assessing Equity Impacts of Surface Transportation Funding Programs

Economy and Global Competitiveness

Best Practices for the Efficient Supply of Chassis for Transporting Intermodal Containers

Financing and Governance

New Coast Guard Authorities

Workforce

Impacts of Alternative Compensation Methods on Truck Driver Retention and Safety Performance

Improving the Efficiency and Effectiveness of the Coast Guard Certificate of Compliance Examination Program for Gas Carriers

Study and Recommendations on the HIMS, FADAP, and Other Drug and Alcohol Programs within the USDOT

Technology

Criteria for Installing Automatic and Remote-Controlled Shutoff Valves on Existing Gas and Hazardous Liquid Transmission Pipelines

Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions

Physical Infrastructure

Repurposing Plastics Waste in Infrastructure

Review of Federal Highway Administration Infrastructure R&D

Table 3

2022 Webinars by *Critical Issues in Transportation* Topics

Safety

- Enabling Automated Truck Inspection for Safety
- Implementing and Evaluating Wildlife Crossings
- On the Edge—New Applications and Safety Outcomes of Edge Lane Roads
- Performance-Based Application of the Highway Safety Manual
- Protocols for Macrotexture Measurement to Prevent Wet Weather Crashes
- Roadside Fire Risk and Prevention Strategies
- Safer Intersections for Pedestrians and Bicyclists
- Saving Lives with Autonomous Truck Mounted Attenuator Systems
- Temporary Pavement Markings and Removal in Work Zones
- New Applications and Safety Outcomes of Edge Lane Roads

Climate Change

- Adaptive Flood Relief Techniques to Enhance Resiliency
- Collaborating to Reduce Greenhouse Gas Emissions
- Complete the Puzzles in Planning and Environmental Linkages Practice
- Geotechnical Asset Performance in a Changing Climate
- Managing Severe Storms and Environmental Impacts
- Withstanding Climate Change—Resilient & Flexible Pavement

Public Health

- Considering Quality of Life in Transportation Planning and Development
- Understanding the Effects of COVID-19 on Impaired Driving

Equity

- Creating Inclusive Mobility
- Enhancing Public Health Equity through Transportation
- Improving Diversity and Inclusion Programs in Public Transportation
- Transportation in an Aging Society—The Future is Now
- Trends in Transit Ridership—Analysis, Causes, and Responses

Economy and Global Competitiveness

- Supply Chain Risk and Resilience—Linking Transportation and Economic Models

Financing and Governance

- Complete the Puzzles in Planning and Environmental Linkages Practice
- Considering Quality of Life in Transportation Planning and Development
- Embracing the Unknown—Strategic Transportation Planning in the Pandemic Age
- Emerging Issues in Priced Managed Lane Networks
- End Communication Breakdown—Practices in Airport Emergency Plans
- Implementing and Evaluating Wildlife Crossings
- Incorporating a Complex Transportation System in the New HCM7
- Integrating Performance, Asset, and Risk Management is Value-Add
- Legal Considerations of Renewable Energy Production in State Right-of-Way
- Managing and Sharing Research Data for Public Access
- Mitigating the Legal Risk of Data Collected at Airports
- New Facilities and Systems Methods in HCM7
- New Transit Fare Policy—Capping and "Cashless" Collection
- Performance Measures for State Aviation Agencies
- Prioritization of Public Transportation Investments
- Rethinking Airport Parking to Enhance Revenues
- Roadside Fire Risk and Prevention Strategies
- Strings Attached—Permissible Uses of Airport Property and Revenue
- Telecommunication at Airports—Trends and Legal Considerations
- What's New in the HCM7 and Why It Matters

Workforce

- Enhancing Public Health Equity through Transportation
- Making the Research in Progress Database Work for You
- Preparing the Next Generation of Airport Industry Professionals
- Temporary Pavement Markings and Removal in Work Zones

Technology

- Adaptive Flood Relief Techniques to Enhance Resiliency
- Advances in Multiresolution Modeling for Traffic Analysis
- Cybersecurity Trends in Transportation
- Designing and Constructing Concrete with Advancing Technologies
- Geotechnical Data Applications and Visualization for Transportation
- Implementing Biometric Technologies at Airports
- Needs and Solutions for Automated Vehicle Infrastructure Implementation
- Next Generation Information Systems for Transportation Projects
- Pavement Performance—Fundamentals and New Technologies
- Robot-Enabled Sensing and Augmented Learning for Bridge Inspection

- Saving Lives with Autonomous Truck Mounted Attenuator Systems
- Using Buried Bridge Techniques to Accelerate Bridge Construction Processes

Physical Infrastructure

- Adaptive Flood Relief Techniques to Enhance Resiliency
- Designing and Constructing Concrete with Advancing Technologies
- How Rough is Your Pavement? Measuring Pavement Profiles for Low-Speed Roads
- Innovations in Testing—Modified Binders Cracking Resistance
- New Era in Data Analytics for Bridge Foundation Design
- Next Generation Information Systems for Transportation Projects
- Optimizing Unpaved Road Design with a Materials Blending Tool
- Pavement Performance—Fundamentals and New Technologies
- Resistivity and Concrete Durability
- Robot-Enabled Sensing and Augmented Learning for Bridge Inspection
- Ruggedness Testing—Evaluating Asphalt Mixture Cracking Resistance
- State DOTs Perspective on Pavement Resilience
- Strategies to Improve the Quality of Pavement Condition Data
- T-1 Steel, I-40 Bridge, and the Way Forward
- Temporary Pavement Markings and Removal in Work Zones
- Sustainable, Resilient, and Durable Concrete Pavements
- Using Buried Bridge Techniques to Accelerate Bridge Construction Processes

Travel Demand

- Expanding Microtransit Services and Improving the Rider Experience
- Micromobility and Transit—Keys to Successful Collaboration
- Microtransit—Innovation in Rural Mobility
- Pedestrian Analysis—Current Practice, Resources, and Applications

Table 4

TRID Searches or Other Feature Article Collections on Critical Issues

Hot Topic Collections - Hot Topics are preconfigured TRID searches that bring back a list of the most recent projects and publications added to the database on a given topic. The topics reflect issues identified by TRB's 'Critical Issues in Transportation' series but can also reflect current popular trends in the transportation literature.

Snap Searches - Summaries of TRB current and past work on specific topics available upon request. The hyperlinked PDF documents include lists of recent reports from TRB and the National Academies, current and upcoming CRP projects, standing technical committee engaged in the topic, and recent and upcoming events related to the topic.

Safety

- Aircraft Bird Strikes (Hot Topic Collection)
- Airport Security (Hot Topic Collection)
- Aviation (Snap Search)
- Aviation and Volcanic Ash (Hot Topic Collection)
- Distracted Driving (Hot Topic Collection)
- Distractions (Snap Search)
- Drone Aircraft and Civilian Airspace (Hot Topic Collection)
- Energy & Pipelines (Snap Search)
- Hurricanes (Hot Topic Collection)
- Local Aid (Snap Search)
- Pedestrian & Bicycle (Snap Search)
- Rail Safety Innovations (Snap Search)
- Roundabouts
- Rural Transportation (Hot Topic Collection) (Snap Search)
- Safety & Human Factors (Snap Search)
- School Transportation Safety (Hot Topic Collection)
- Transit Innovations (Snap Search)
- Unintended Acceleration (Hot Topic Collection)

Climate Change

- Air Quality & Climate Change (Snap Search)
- Climate Change (Hot Topic Collection)
- Decarbonization (Snap Search)
- Environment & Sustainability (Snap Search)

- Environmental Process (Snap Search)
- Hurricanes (Hot Topic Collection)
- Natural Resources (Snap Search)
- Passenger Transportation (Snap Search)
- Pedestrian & Bicycle (Snap Search)
- Resilience (Hot Topic Collection)
- Sustainable Communities (Hot Topic Collection)
- Sustainable Growth (Hot Topic Collection)

Public Health

- Accessibility (Snap Search)
- Communicable Diseases & Public Health (Snap Search)
- Communicable Diseases and Emergency Response and Preparedness (Hot Topic Collection)
- Decarbonization (Snap Search)
- Environment & Sustainability (Snap Search)
- Pandemics (Hot Topic Collection)
- Passenger Transportation (Snap Search)
- Pedestrian & Bicycle (Snap Search)
- Rural Transportation (Hot Topic Collection)
- Security & Emergencies (Snap Search)
- Sustainable Communities (Hot Topic Collection)
- Transportation & Health (Snap Search)
- Tribal Transportation (Snap Search)

Equity

- Accessibility (Snap Search)
- Air Quality & Climate Change (Snap Search)
- Communities & Cultural Concerns (Snap Search)
- Local Aid (Snap Search)
- Passenger Transportation (Snap Search)
- Public Transportation (Snap Search)
- Rural Transportation (Snap Search)
- Social Equity (Hot Topic Collection)
- Social Equity & Underserved Populations (Snap Search)
- Sustainable Communities (Hot Topic Collection)
- Sustainable Growth (Hot Topic Collection)
- Tribal Transportation (Snap Search)

Economy and Global Competitiveness

- Aviation (Snap Search)
- Economic Impact (Snap Search)
- Economic Recovery (Hot Topic Collection)
- Freight Transportation (Snap Search)
- Marine Transportation (Snap Search)
- Natural Resources (Snap Search)
- Passenger Transportation (Snap Search)
- Rail (Snap Search)

Financing and Governance

- Administration & Management (Snap Search)
- Asset Management (Hot Topic Collection)
- Capital Investments (Snap Search)
- Finance (Snap Search)
- Performance Based Regulations (Snap Search)
- Planning & Forecasting (Snap Search)
- Policy (Snap Search)
- Procurement (Snap Search)
- Project Delivery (Snap Search)
- Public Commenting (Snap Search)
- Right of Way, Utilities & Outdoor Advertising (Snap Search)
- Transit Station Cooperative Development (Snap Search)

Workforce

- Administration & Management (Snap Search)
- Education & Training (Snap Search)
- Work Zones (Snap Search)
- Workforce (Hot Topic Collection)
- Workforce (Snap Search)

Technology

- Air Quality & Climate Change (Snap Search)
- Connected & Automated Vehicles (Snap Search)
- Cybersecurity (Snap Search)
- Data (Snap Search)
- Electric Vehicles (Snap Search)
- Geotechnology (Snap Search)
- Innovation (Snap Search)
- Rail Safety Innovations (Snap Search)
- Technological Innovations (Hot Topic Collection)
- Transformational Technology (Hot Topic Collection)
- Transit Innovations (Snap Search)
- UAS / UAV (Snap Search)

Physical Infrastructure

- Accessibility (Snap Search)
- Asset Management (Hot Topic Collection)
- Asset Management (Snap Search)
- Aviation (Snap Search)
- Bridges & Other Structures (Snap Search)
- Capital Investments (Snap Search)
- Construction (Snap Search)
- Energy & Pipelines (Snap Search)
- Freight Transportation (Snap Search)
- Geotechnology (Snap Search)
- Hydraulics & Hydrology (Snap Search)
- Maintenance & Preservation (Snap Search)
- Materials (Snap Search)
- Pavement Design (Snap Search)
- Pedestrian & Bicycle (Snap Search)
- Public Transportation Maintenance (Snap Search)
- Roundabouts
- Rural Transportation (Hot Topic Collection)
- Terminals & Facilities (Snap Search)
- Winter Operations & Maintenance (Snap Search)
- Work Zones (Snap Search)

Travel Demand

- Demand Responsive & Innovative Transportation Services (Snap Search)
- Operations & Traffic Management (Snap Search)
- Passenger Transportation (Snap Search)
- Pedestrian & Bicycle (Snap Search)
- Rural Transportation (Hot Topic Collection)
- Shared Mobility (Snap Search)
- Travel Behavior (Snap Search)
- Vehicle Sharing (Hot Topic Collection)

Table 5

TR News Articles on Critical Issue Topics in 2022

Note: Several of the articles could have been listed under more than one Critical Issue topic.

Safety

- #337: Getting to The Other Side: Safe Navigation for Pedestrians and Bicyclists at Alternative and Other Intersections and Interchanges (Bastian Schroeder, Shannon Warchol, and Mike Alston)
- #338: Where Speed Limits and Safety Intersect (Jenny O'Connell)
- #339: Consensus Study Report: Keeping DUKW Boat Passengers Safe (Mark Hutchins)

Climate Change

- #341: Shifting Gears to Zero Emissions: Five Strategies for U.S. Trucks and Buses (Ray Minjares)
- #341: Carbon Reduction in Aviation: What Are the Research Needs? (Kate Andrus and Carly Shannon)

Public Health

- #338: Does LED Roadway Lighting Affect Driver Sleep Health? (Rajaram Bhagavathula)
- #340: COVID-19 Changed Business-As-Usual for State DOTs: How Nebraska DOT Responded (Lorraine Legg)
- #342: Keep It Moving! Maintaining the Global Vaccine Supply Chain (Ravi Anupindi, Prashant Yadav, and Elizabeth Ashby)

Equity

- #337: Serving Passengers with Hearing Loss (Stephen O. Frazier)
- #338: Missing and Murdered Indigenous Women: Traffickers Use Transportation to Exploit the Vulnerable. How Can the Industry Stop Them? (Margo Hill)

Financing and Governance

- #337: Green Bonds and the Transit Industry (Damon Fordham)
- #341: California's Quest to Reduce Vehicle Miles Traveled (Susan Handy)

Technology

- #337: Digital Terrain Models Use Cases, Benefits, and Barriers (Makram Bou Hatoum, Hala Nassereddine, and Gabriel Dadi)
- #339: It's Electric! Now What? (Cathy Frye)
- #340: Augmented Reality: Existing Capabilities and Future Opportunities (Fernando Moreu, Kaveh Malek, Elijah Wyckoff, and Ali Mohammadkhorasani)

Physical Infrastructure

- #337: Preservation, Maintenance, and Renewal: A Strategic Approach to Prepare for the Future (Jagannath Mallela, Hal Kassoff, and Amir N. Hanna)
- #338: Working Together to Improve Bus Stops (Todd Hansen)
- #339: Maintenance and Longevity of Longitudinal Joints (Larry Galehouse and Larry Scofield)

Table 6
A Sample List of E-newsletter Articles, Blogs, and Podcasts on Critical Issues in 2022

Safety

https://podcasts.apple.com/us/podcast/amy-benedick-and-the-distracted-driving-crisis/id1547857131?i=1000515212982
https://podcasts.apple.com/us/podcast/robert-sumwalt-and-prioritizing-transportation-safety/id1547857131?i=1000522537773
https://www.nationalacademies.org/trb/blog/passenger-safety-gets-a-boost-with-research
https://www.nationalacademies.org/trb/blog/ongoing-research-to-advance-aviation-safety
https://www.nationalacademies.org/trb/blog/transportation-research-makes-the-road-safer-for-students-to-get-back-to-school

Climate Change

https://podcasts.apple.com/us/podcast/chris-hendrickson-and-transportation-net-zero/id1547857131?i=1000512614415
https://podcasts.apple.com/us/podcast/shawn-wilson-and-dealing-with-a-wetter/id1547857131?i=1000534022545
https://www.nationalacademies.org/trb/blog/extreme-weather
https://www.nationalacademies.org/trb/blog/address-climate-change-and-breathe-easier-with-research-on-transportation-emissions
https://www.nationalacademies.org/trb/blog/clearing-the-skies-with-research-on-electric-vehicles
https://www.nationalacademies.org/trb/blog/resilience-research-becoming-a-bigger-part-of-transportation-planning

Public Health

https://podcasts.apple.com/us/podcast/stewart-mader-and-how-transit-gets-people-to-vaccinations/id1547857131?i=1000524268195
https://www.nationalacademies.org/trb/blog/improving-health-care-through-transportation
https://www.nationalacademies.org/trb/blog/funding-transportation-beyond-the-covid-19-pandemic
https://www.nationalacademies.org/trb/blog/transportation-in-the-face-of-communicable-disease

Equity

https://podcasts.apple.com/us/podcast/anthony-foxx-and-equity/id1547857131?i=1000504636442
https://podcasts.apple.com/us/podcast/gloria-jeff-and-how-transportation-equity-is-a-pizza/id1547857131?i=1000531850070
https://podcasts.apple.com/us/podcast/alan-jette-and-gary-weissel-and-wheelchairs-on-airplanes/id1547857131?i=1000540884728

https://www.nationalacademies.org/trb/blog/building-socioeconomic-equity-through-transportation-research
https://www.nationalacademies.org/trb/blog/making-travel-more-equitable-disabilities
https://www.nationalacademies.org/trb/blog/equitably-connecting-rural-and-urban-populations

Economy and Global Competitiveness

https://www.nationalacademies.org/trb/blog/transporting-new-energy-options-safely-is-key-for-us-economy
https://www.nationalacademies.org/trb/blog/building-transportation-supply-chain-resilience-after-a-pandemic

Financing and Governance

https://podcasts.apple.com/us/podcast/herby-lissade-and-emergency-management-for/id1547857131?i=1000539405038
https://podcasts.apple.com/us/podcast/jacky-grimshaw-and-pinpointing-community-needs-for/id1547857131?i=1000546730951

Workforce

https://www.nationalacademies.org/trb/blog/women-in-transportation
https://www.nationalacademies.org/trb/blog/customer-service-resources-can-assist-transportation-workforce
https://www.nationalacademies.org/trb/blog/steps-for-transportation-workforce-diversity-outlined-in-trb-research
https://www.nationalacademies.org/trb/blog/a-safe-healthy-workforce-keeps-our-transportation-moving
https://www.nationalacademies.org/trb/blog/trb-offers-a-running-start-to-transportations-next-generation

Technology

https://www.nationalacademies.org/trb/blog/research-can-help-micromobility-have-a-supersized-effect-on-future-transportation
https://www.nationalacademies.org/trb/blog/data-sharing-presents-major-opportunities-for-transportation
https://www.nationalacademies.org/trb/blog/cybersecurity-expands-into-all-realms-of-transportation
https://www.nationalacademies.org/trb/blog/drones-are-still-a-new-technology-but-the-research-is-spreading-its-wings
https://www.nationalacademies.org/trb/blog/innovative-technology-is-ready-to-move-automated-transportation-forward

Physical infrastructure

https://podcasts.apple.com/us/podcast/susan-shaheen-and-planning-future-mobility/id1547857131?i=1000507781791
https://www.nationalacademies.org/trb/blog/the-era-of-smart-infrastructure-demands-strong-data-and-technology-management

https://www.nationalacademies.org/trb/blog/reducing-the-complexity-of-decision-making-through-a-roundabout-renaissance
https://www.nationalacademies.org/trb/blog/work-zones-need-detailed-research-planning-and-technology-to-be-made-safe

Travel Demand

https://www.nationalacademies.org/trb/blog/research-keeps-traffic-moving

(Podcasts can also all be found here: https://www.nationalacademies.org/podcasts/trb)

Table 7

International and Diversity-Related Partner Organizations

International Organizations

- China Highway and Transportation Society (CHTS)
- China Overseas Transportation Association (COTA)
- European Conference of Transport Research Institutes (ECTRI)
- International Road Federation - Geneva (IRF)
- International Transport Forum (ITF)
- Pan-American Society of Transportation Research (PANAMSTR)
- The World Bank
- World Conference on Transport Research Society (WCTRS)
- World Road Association (PIARC)

Diversity-Related Organizations

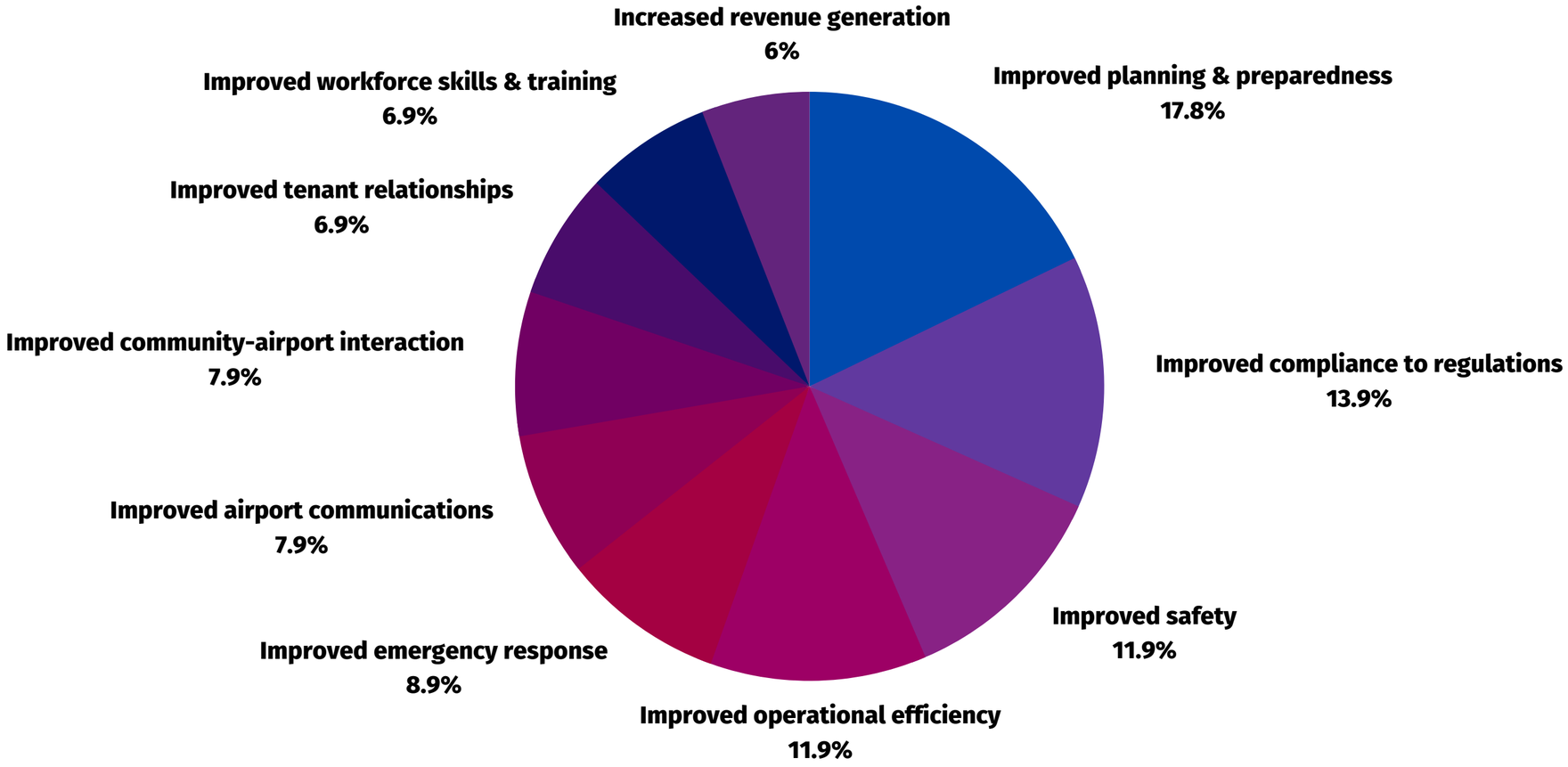
- Airport Minority Advisory Council (AMAC)
- Council on Minority Transportation Officials (COMTO)
- Latinos in Transit (LIT)
- WTS International (Women’s Transportation Seminar)

Figure 1

Impact Information for TRB's Cooperative Research Programs

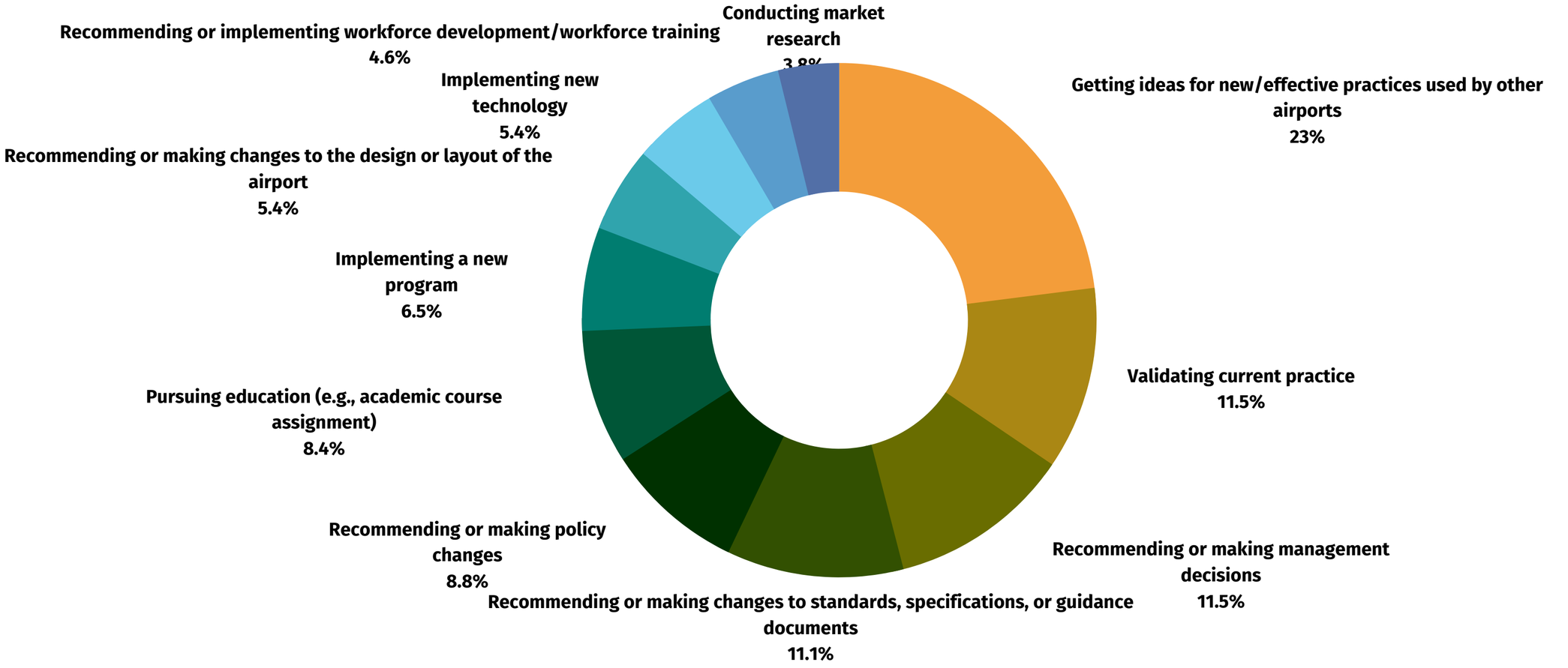
How has ACRP benefited airports?

Airport practitioners indicated "improved planning and preparedness" as the greatest benefit gained from ACRP. These are the top ten responses given.



Why were ACRP products downloaded?

Survey respondents answered why they downloaded an ACRP product. "Getting ideas for new and effective practices used by other airports" was the highest response.



Airports share use cases of ACRP products.

Airport practitioners were asked to provide specific examples of ACRP products used and benefits they provide. Of those that responded to the survey, 23 percent took the time to include an extended response to this question, and many included praise for these products.

The above word cloud illustrates which ACRP products were mentioned by practitioners when asked which they have used in the past. Font size corresponds with number of times that word/product was mentioned as being used, therefore greater font size equals more mentions.

How do practitioners use ACRP products? We asked and they shared.

"When I was a new airport manager, ACRP Report 16 proved to be invaluable. I have used several other ACRP products to help me understand grant assurances, regulations, etc." - Statesboro Bulloch County Airport, GA

"ACRP Report 32 is the bible for GA Airports wildlife mitigation efforts. Used by OXB Airport Management. Info also used by other non-airport municipal agencies. Practices in effect from publish date 2010 to today."- Ocean City Municipal Airport, MD

"We have used several ACRP products over the years that I have managed this facility. When I was new to the job, I found them essential since there was no turn over from the previous manager and I was expected to pick up the necessary skills rather quickly. I routinely pass out copies of the one which describes the AIP process and regulatory issues for new members of my airport authority." - Jackson County Airport, GA

"Upon entering into the Aviation industry as an Airport Manager I read several ACRP editions to self educate and learn about the industry." - Curtis Field Airport, City of Brady, TX

"ACRP Report 58 is critical for educating new airport authority members."- Coastal Carolina Regional Airport, NC

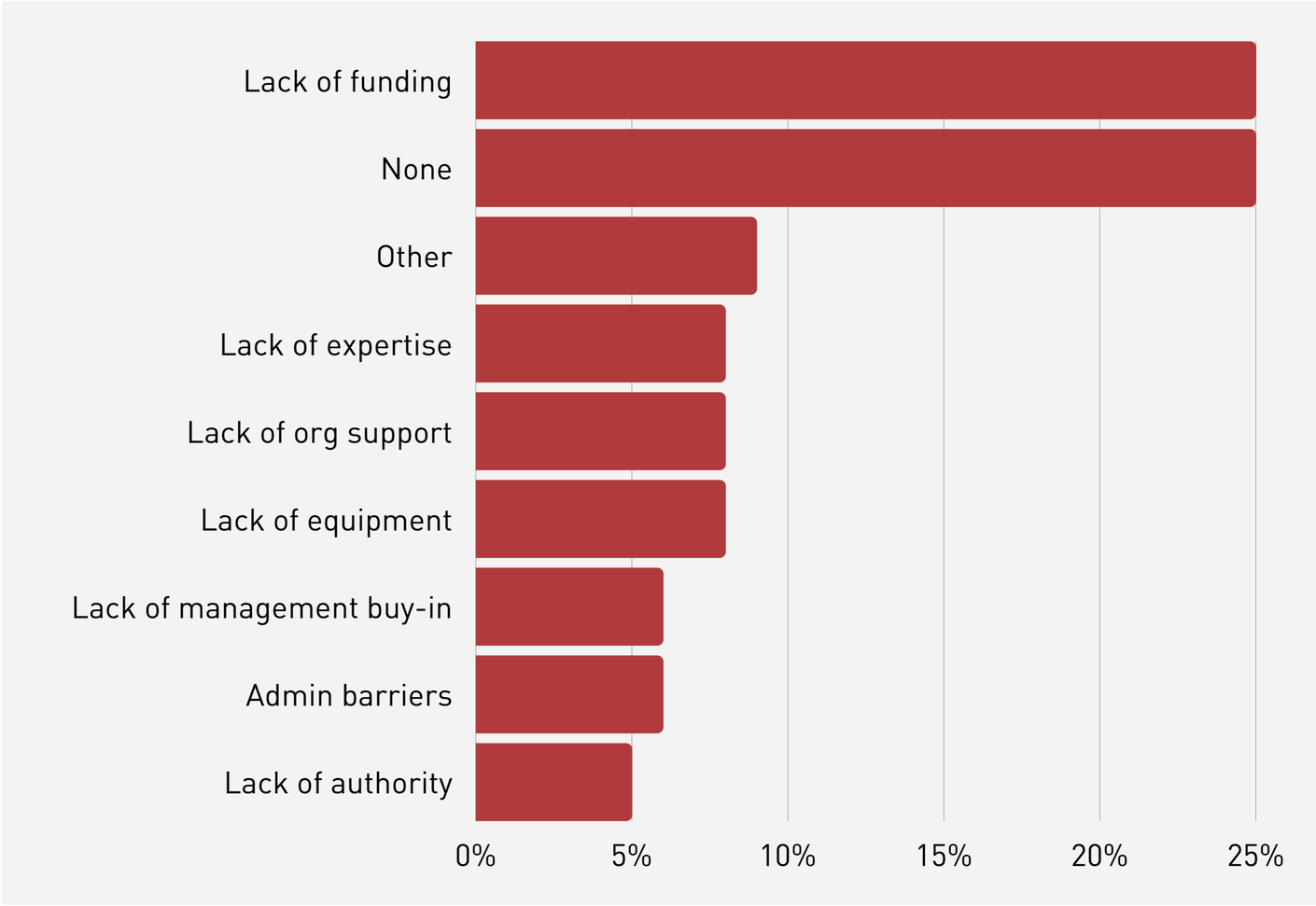
"...ACRP products are treated very much like any other source of information that we may find on the web, through conversations with airport colleagues, obtain at conferences, etc. It is difficult to quantify that XYZ Report is being used exclusively for XYZ practice. Rather it is a valuable tool that is part of a bigger pool of resources used by the Airport when making decisions on solutions to Airport related challenges." - Lincoln Airport, NE

"I have used just about every ACRP report." - Cherry Capital Airport, MI

What barriers exist to implementing ACRP research results?

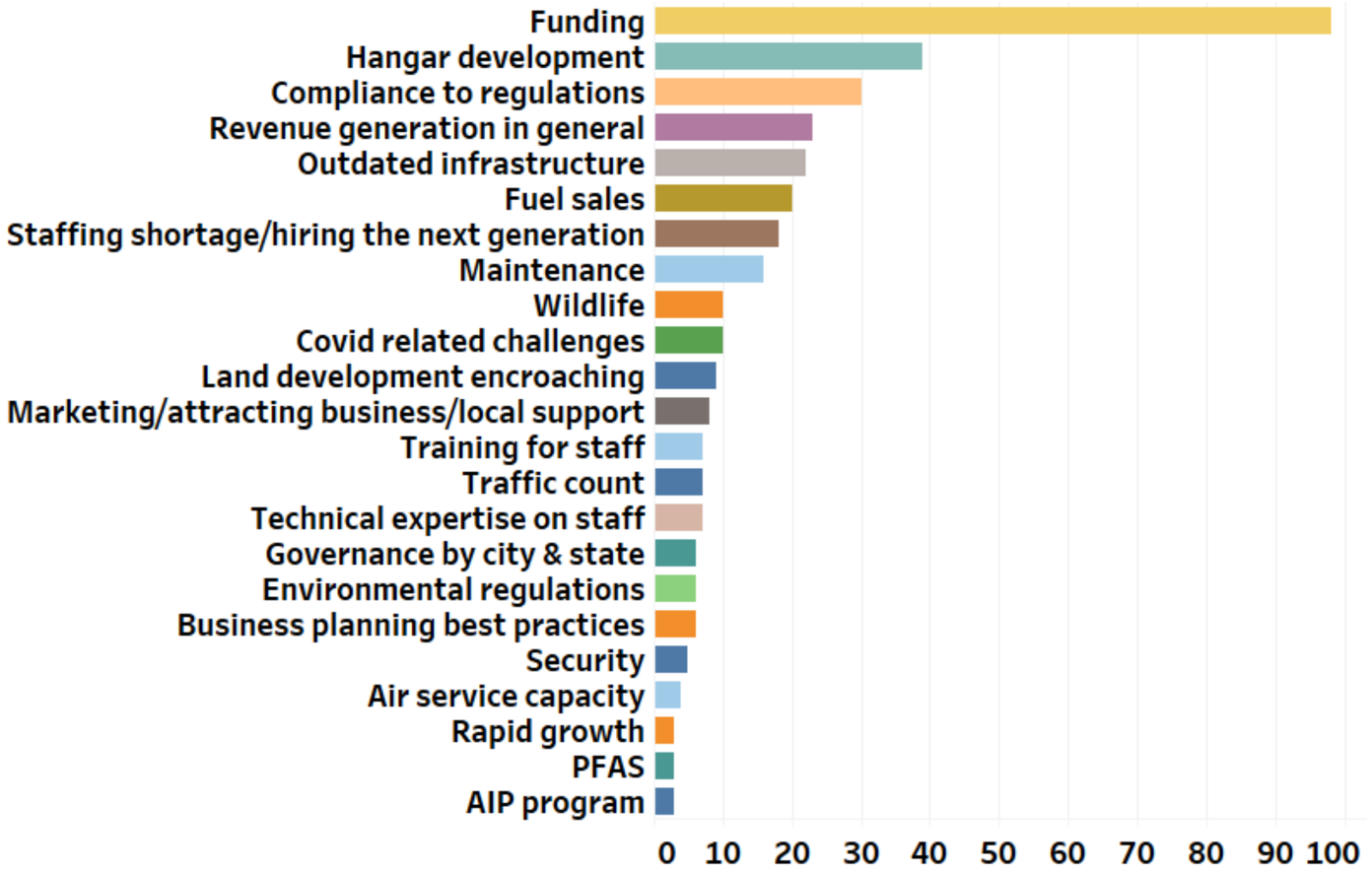
Practitioners provided responses.

ACRP strives to produce research results that are easily implemented, and 25 percent of survey respondents said they experienced no barriers in doing so. Of those indicating a barrier, the most common was lack of funding (25 percent), followed by other varying issues. This information is important for ACRP as it continues to make products accessible to airports of all sizes and locations, and seeks to facilitate implementation.



Challenges faced by airports today.

Survey respondents were given an open ended question asking what key challenges airports face today. The most common response was lack of funding, often for expansion of GA airports, followed by hangar development, and compliance to regulations.



ACRP is valuable to the industry.

ACRP asked airport practitioners whether the program is easily accessible, relevant and timely with research results, and aiding in airport decision-making. The greatest number of responses agree that ACRP provides value to the industry on all measures.

	No Opinion	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
ACRP is valuable to the industry	2.1%	3.4%	0.0%	5.5%	11.0%	78.1%
ACRP conducts research that our organization does not have the resources to conduct ourselves	0.7%	3.4%	1.4%	7.5%	14.4%	72.6%
ACRP conducts research in areas that are useful and relevant to our organization	0.7%	2.7%	2.1%	2.7%	25.3%	66.4%
ACRP conducts research in areas that are useful to immediate and future technology developments in the airport industry	2.7%	2.1%	1.4%	5.5%	29.5%	58.9%
ACRP provides easily accessible information and data that our organization can use to aid in decision-making	1.4%	2.7%	6.2%	7.5%	25.3%	56.8%

INTERESTED IN ENGAGING WITH ACRP?

Please contact the ACRP Program Manager,
Marci Greenberger.
mgreenberger@nas.edu

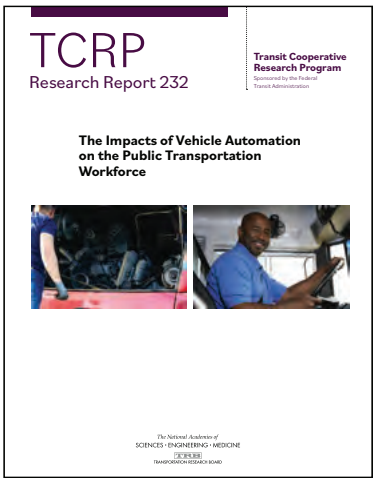
2021 Impact Report written by ACRP Impact Analyst,
Sarah Kosling.
skosling@nas.edu

ACCOMPLISHMENTS IN 2022

In Fiscal Year 2022, TCRP produced 18 publications, including 6 research reports, 8 syntheses, 2 legal research digests, and 2 web-only documents, bringing the total to more than 759 publications since the inception of the program. These publications are available at **http://www.trb.org/Publications/PubsTCRPPublications.aspx**.

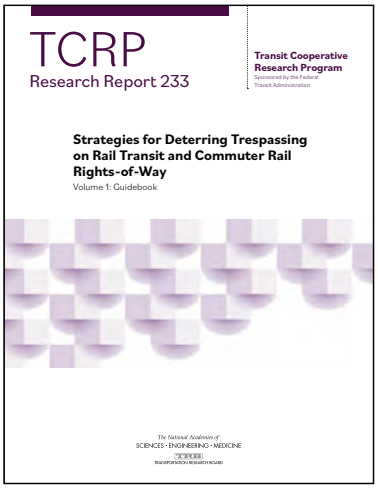
The following TCRP publications of particular interest were completed during the year.

Workforce Development



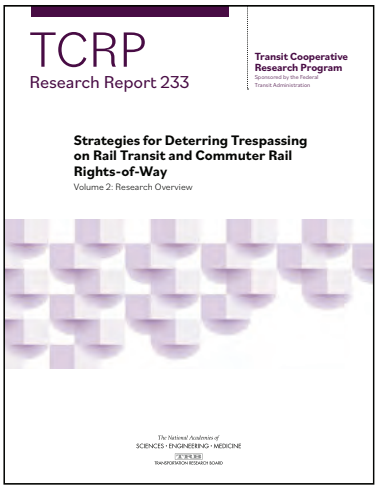
TCRP Research Report 232: The Impacts of Vehicle Automation on the Public Transportation Workforce provides an analysis of the possible impacts of automation on the public transportation workforce. The report examines five possible transit automation use cases on five transit jobs and estimates the effects of automation on different job tasks. This report will provide public transit agencies with the possible impacts of automation on their transit workforce and guiding principles and strategies that could help prepare them for these impacts. The report was developed for public transit systems of all sizes and their stakeholders, including policymakers, transit board members, and elected officials, who are seeking better understanding of the possible effects of automation on transit and the transit workforce. The results presented in this report will provide the transit industry with discussion points on planning for those potential automation effects on the workforce.

Operations

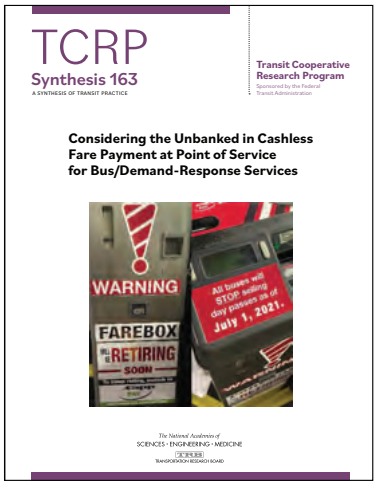


TCRP Research Report 233: Strategies for Deterring Trespassing on Rail Transit and Commuter Rail Rights-of-Way, Volume 1: Guidebook and *Volume 2: Research Overview* provides strategies to deter trespassing on rail transit and commuter rail exclusive and semi-exclusive rights-of-way, including within station areas outside designated pedestrian crossings. A great risk facing the rail transit and commuter rail industries is the continuing problem with trespassing incidents that occur on systems throughout the United States. Most of the accidents and deaths are preventable, and rail transit and commuter rail agencies have deployed techniques and treatments to address trespassing. This report provides trespassing prevention strategies to both transportation agencies and regulatory bodies for consistent implementation

and will be of immediate use to designers of new rail systems, existing rail transit and commuter rail agencies, planning groups, local development firms, local municipalities, and other stakeholder entities who influence the rail system and local land development adjacent to the rail transit and commuter rail right-of-way. *Volume 1* presents the guidebook, including two appendices which contain the countermeasure summary matrix and instructions for the interactive spreadsheet. *Volume 2* presents the research activities conducted to produce the guidebook and the interactive spreadsheet. This report also includes a video that highlights the importance of using all the available tools to counteract trespassing.



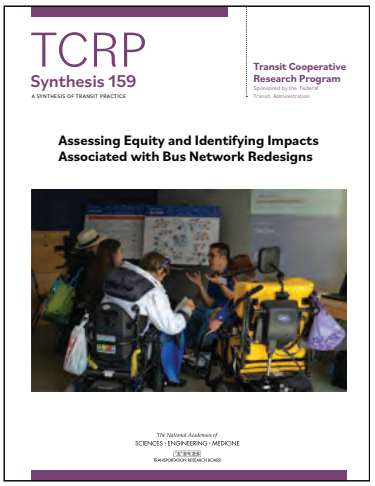
TCRP Synthesis 163: Considering the Unbanked in Cashless Fare Payment at Point of Service for Bus/Demand-Response Services informs transit systems of the impacts of going cashless. The synthesis includes an introduction, a literature review, and case examples of nine transit agencies that have publicly stated they are considering going cashless or have eliminated onboard cash fare collection either temporarily, as a pilot, or permanently. Each case example includes a description of the agency's fare policy and fare collection system; their motivation for going cashless; policy and regulatory factors; consideration of special populations of riders; and outcomes, plans, and lessons learned. The synthesis looks at the effects of going cashless at point of service on the unbanked population's access to public transportation. This study will inform transit agencies as they evaluate the opportunities and challenges of going cashless.



TCRP Synthesis 164: Bus Rapid Transit: Current State of Practice documents the current practices and lessons learned of U.S. and Canadian transit systems that use bus rapid transit (BRT) components to improve the reliability of bus service, bus travel time, operation efficiency, and customer satisfaction to increase ridership. BRT and BRT light continue to interest transit agencies. *TCRP Report 90: Bus Rapid Transit* was published in 2003 and *TCRP Report 118: Bus Rapid Transit Practitioner's Guide* was published in 2007. Since then, agencies have continued to struggle with the ridership and operational benefits associated with investment in exclusive BRT lanes

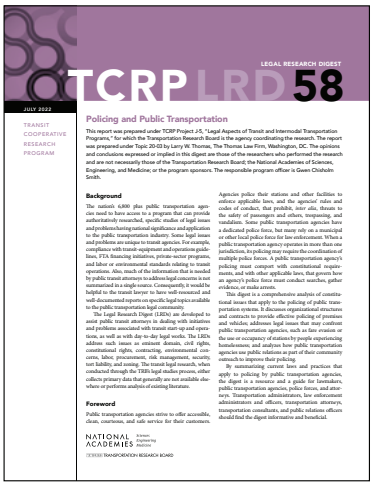
and turning restrictions, minimum service frequencies, integration with local bus service and other routes in the corridor, basic versus high-end stations, level boarding platforms, upgraded fare collection systems, and branding. After more than 13 years of BRT experience, stronger information on all these issues is now available. This document will inform transit executives and decision-makers as they make their decisions about BRT in their communities and will also help identify the need for future studies.

Equity



TCRP Synthesis 159: Assessing Equity and Identifying Impacts Associated with Bus Network Redesigns documents the current practice of how transit providers are defining, assessing, and addressing the equity impacts of bus network redesigns, including and beyond the FTA's Title VI regulatory requirements. The study expands on recently conducted and published TCRP reports—*TCRP Synthesis 140: Comprehensive Bus Network Redesigns* (2019) and *TCRP Research Report 221: Redesigning Transit Networks for the New Mobility Future* (2021)—that discussed the current use of full-system bus network redesigns among transit agencies but provided limited detail regarding equity in that process. The synthesis will assist transit agencies that are considering redesigning their bus networks. The report presents the reality and complexity of conducting an equitable bus network redesign that will allow agencies to make better decisions about the process.

Legal



TCRP Legal Research Digest 58: Policing and Public Transportation is a comprehensive analysis of constitutional issues that apply to the policing of public transportation systems. It discusses organizational structures and contracts to provide effective policing of premises and vehicles; addresses legal issues that may confront public transportation agencies, such as fare evasion or the use or occupancy of stations by people experiencing homelessness; and analyzes how public transportation agencies use public relations as part of their community outreach to improve their policing. By summarizing current laws and practices that apply to policing by public transportation agencies, the digest is a resource and a guide for lawmakers, public transportation agencies, police forces, and attorneys. Transportation administrators, law enforcement administrators and officers, transportation attorneys, transportation consultants, and public relations officers should find the digest informative and beneficial.

NCHRP research products contribute to formulating national guides, handbooks, and manuals

NCHRP research forms the basis for AASHTO publications that are widely used by transportation agencies. The publications serve as industry standards and are often the result of continuous cycles of research conducted under the NCHRP. Below are some of those publications from the last 15 years that were developed from NCHRP research.

Exhibit 9: AASHTO publications developed from NCHRP research since 2006.

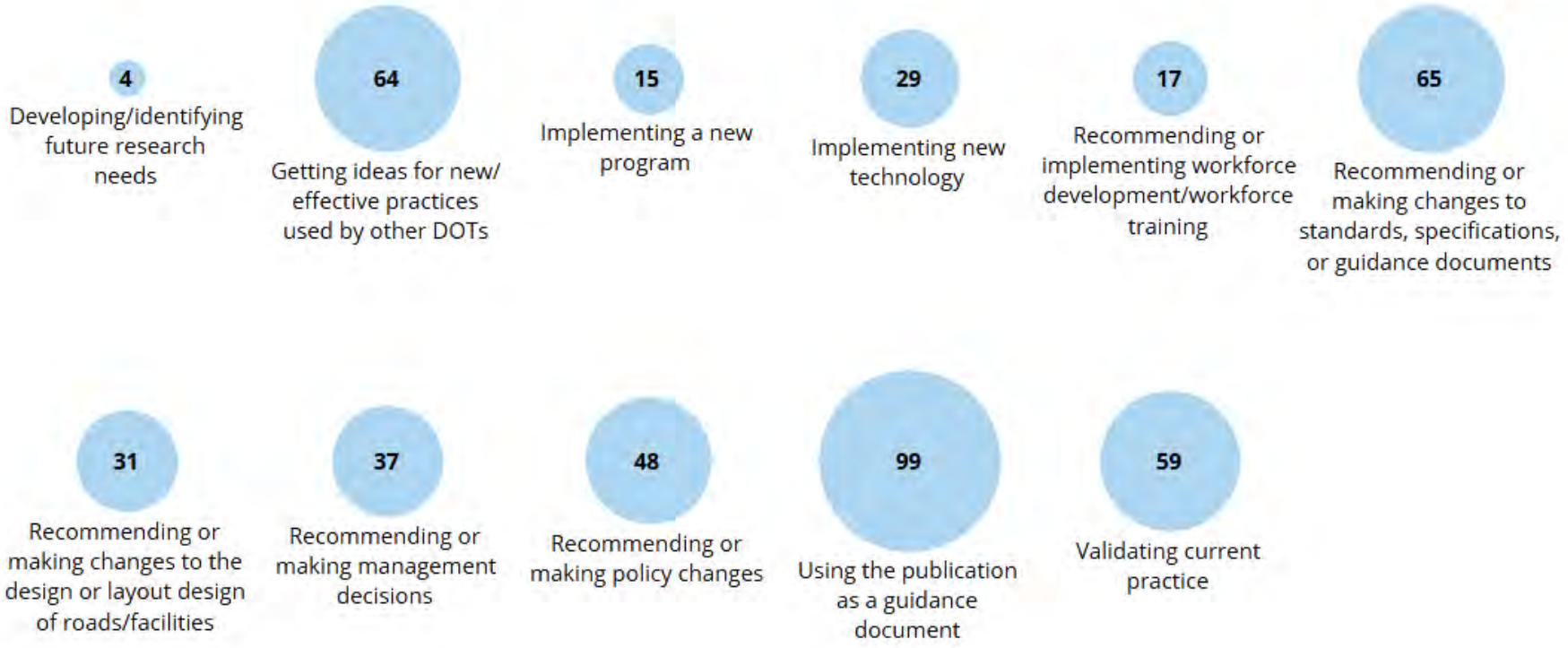
In late 2021, NCHRP surveyed practitioners, researchers, and decisionmakers within state DOTs and the larger transportation community to determine what NCHRP research products were used, how they were used, and what benefits they produced. Covering 61 NCHRP publications published in the year 2017, over 550 surveys were completed, providing valuable insights. The full list of publications is provided as Appendix A.

The next few pages highlight what our respondents told us about where and how those publications were used and the benefits the publications produced within the respective organizations.

How NCHRP research products were applied

The same NCHRP research product can often be applied differently by different users. Below are some of the major ways NCHRP research product were applied, according to our 2021 NCHRP Publications Survey.

Exhibit 10: How organizations applied NCHRP research products.

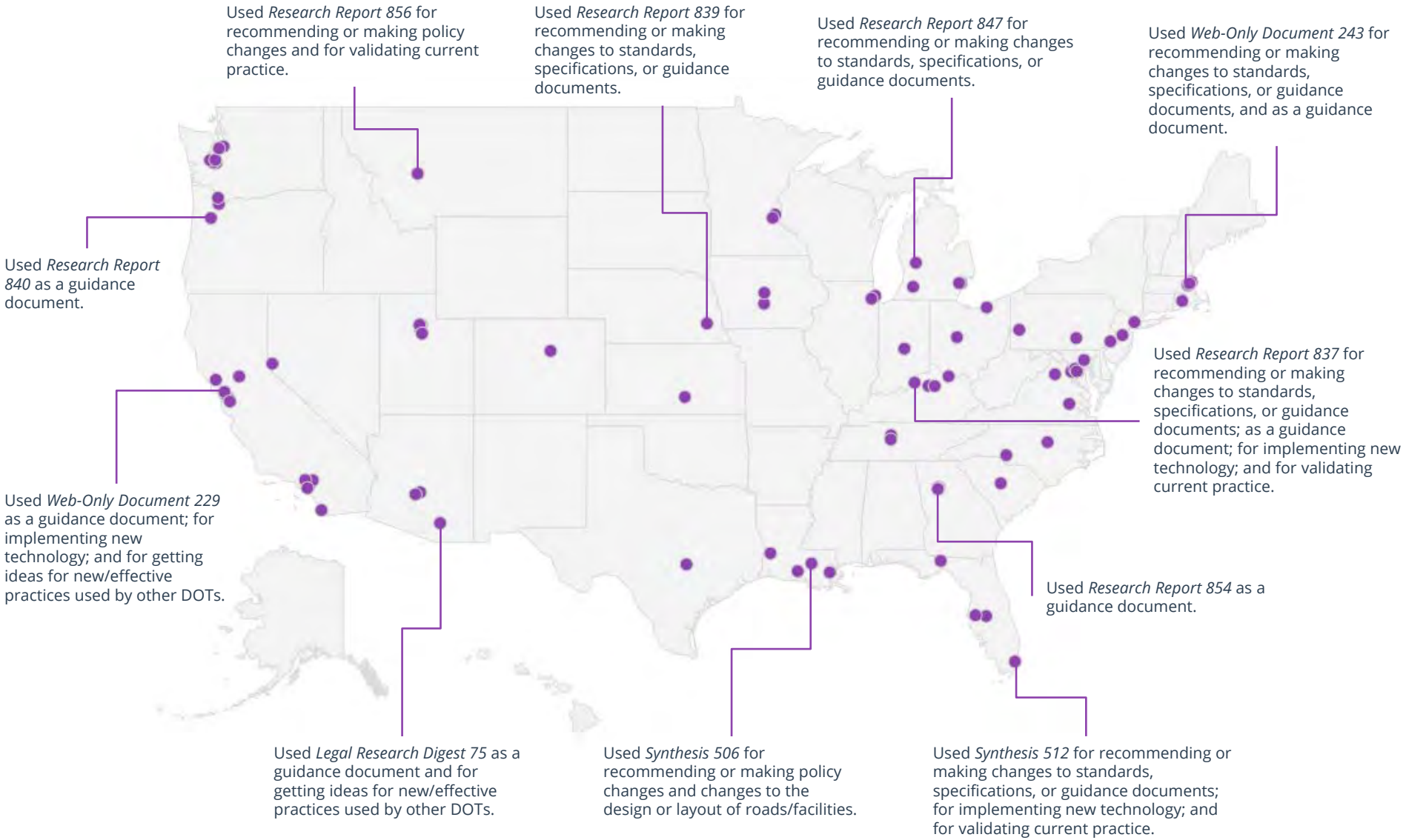


The size of the circles and the numbers in them denote the number of responses for that application.

Where NCHRP research products were applied

In 2021, 152 respondents indicated that their organization had successfully applied NCHRP research products. Each dot on the map below denotes a location where the respondents' organization applied NCHRP research products.

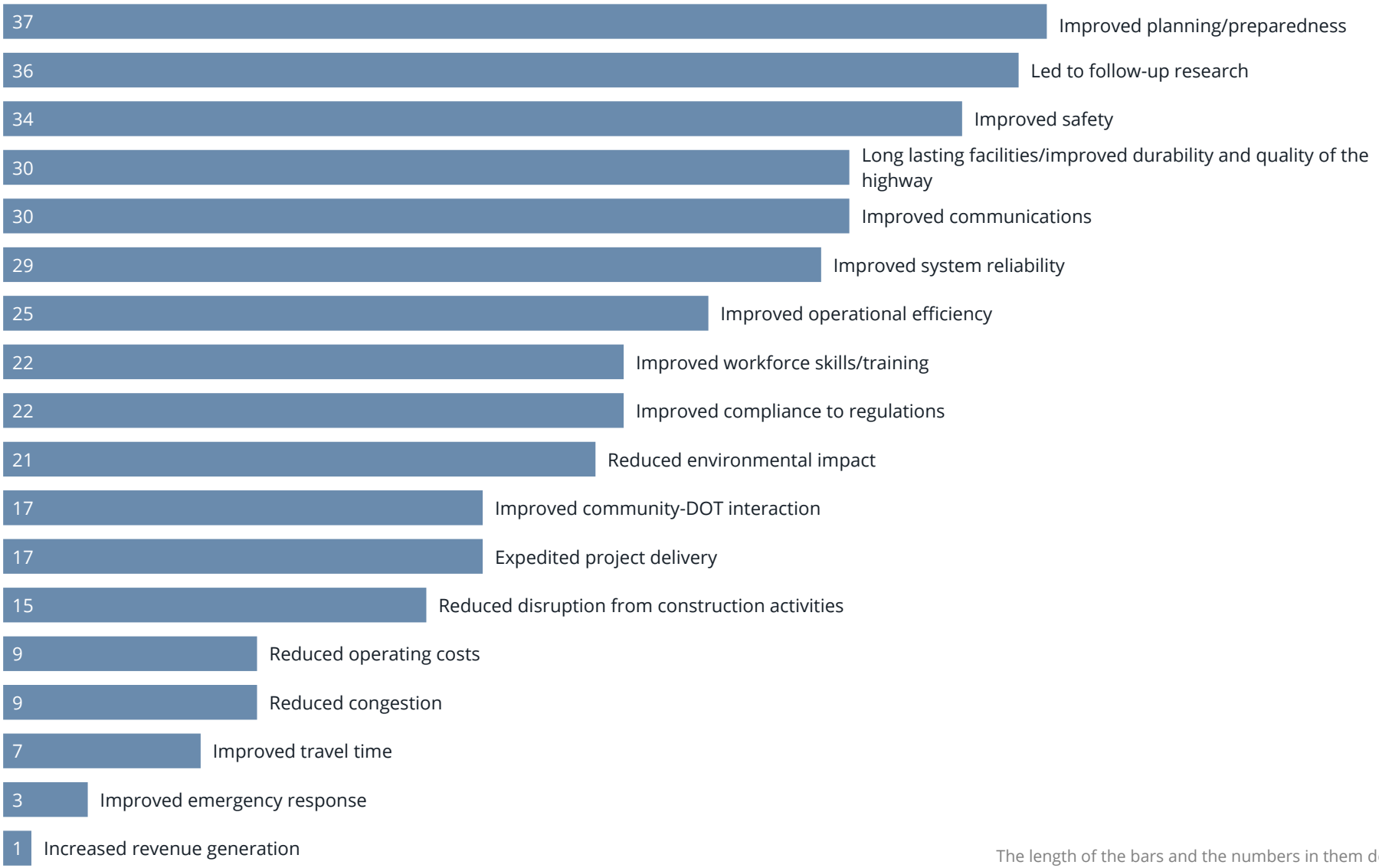
Exhibit 11: Where organizations used NCHRP research products, with selected examples.



What the benefits of applying NCHRP research products were

The application of NCHRP research often provides several benefits to the transportation system. The following are the major benefits indicated by our 2021 NCHRP publications survey respondents.

Exhibit 12: How implementation of NCHRP research products benefitted the transportation systems.



The length of the bars and the numbers in them denote the number of responses for that benefit.

How NCHRP research products were used

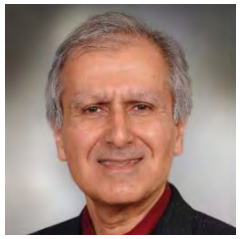
Developing a managed lane assistance plan

Maria 'Sole' Aranguiz, the Chief of Forecasting and Traffic Analysis at the California Department of Transportation and her team working in District 8 used *NCHRP Research Report 835: Guidelines for Implementing Managed Lanes* to develop a managed lane assistance plan. In order to identify deficiencies and complete the managed lane network system with an emphasis on congestion, safety, and revenue generation, her team at Caltrans referenced and used figures from the document and built upon what they had learned from past experience. *Research Report 835* helped clarify whether the team were up to date, understood concepts, gave pros and cons in moving in a certain direction, helped with developing a framework, and demonstrated important performance metrics to capture.

Aranguiz explains, "Sometimes you develop an idea in your mind, but it's difficult to determine whether the performance measures are achievable and what it would take to compile and analyze them." This managed lane assistance plan was created for the district as new policy is coming from Caltrans headquarters, which is expected to create a master plan for the development of managed lanes with a greater emphasis on equity and a multimodal aspect with Greenhouse Gas and Transportation Demand Management (TDM).

NCHRP Research Report 835: Guidelines for Implementing Managed Lanes provides guidance for transportation agencies interested in designing, implementing, operating, and maintaining managed lanes.

Formulating revisions to bridge design code



Bahram M. Shahrooz is a Professor of Structural Engineering at the University of Cincinnati and he was the principal investigator for *NCHRP Research Report 842: Mapping Heavy Vehicle Noise Source Heights for Highway Noise Analy*sis. He explains how he used the research in his own work; "One of the main objectives of my research has been to formulate revisions to the bridge design code." This report, as well as other reports (*NCHRP Research Report 679: Design of Concrete Structures Using High-Strength Steel Reinforcement*, and soon to be published *NCHRP Research Report 994: Use of 0.7-in. Diameter Strands in Precast Pretensioned Girders*) were used by AASHTO T-10 Concrete Design Committee to revise AASHTO LFRD Bridge Design Specifications. "Although AASHTO is a U,S. design code, it has been adapted by other countries and/or has been used as the basis of bridge code in a number of other countries. Therefore, the research findings culminated in NCHRP reports have wide reaching impacts."

Shahrooz has been the principal investigator of three NCHRP projects and co-principal investigator of two projects. He says that each of these projects has provided a unique collaborative platform for university faculty and researchers, practicing engineers and consultants, and graduate and undergraduate students to develop new knowledge for better and safer design of bridges. Among many other benefits, these interactions have helped him to teach students the latest research that will form the basis of upcoming revisions of bridge design code, enabled him to publish journal articles for disseminating seminal information and knowledge to the engineering community, given him an incentive to develop design and computational tools that he can use in other research projects and in his classes, helped students learn a variety of different skills and better prepare them for their future careers, and allowed students to interact with and learn from leading experts in the field.

NCHRP Research Report 842: Mapping Heavy Vehicle Noise Source Heights for Highway Noise Analysis provides an analysis to determine height distributions and spectral content for heavy vehicle noise sources.

How NCHRP research products were used (continued)

Setting posted speed limits

Brian Chandler is the National Director for Transportation Safety at DKS Associates and has used *NCHRP Research Report 966: Posted Speed Limit Setting Procedure and Tool: User Guide* extensively in his work. He explains that in Washington State, cities and counties are able to set their own speed limit policies without state DOT oversight. "There are still some state guidelines and rules about establishing speed maximums and minimums, but within the broad policy there is room to set local speed limits."

The first agency he worked with was Island County, where they have county roads, state routes, and appropriated areas. Brian worked on the country roads system with the county to develop their policy based off *NCHRP Research Report 966* guidelines, which is meant to be used as a template and modified based on user needs. "Island County doesn't have any 4, 5, 6 lane roadways so there are aspects of the NCHRP study that weren't applicable and the county also doesn't have any urban areas, so these areas were modified." Chandler said they also developed a customized Excel tool using the same matrix and processes that the NCHRP project research team used but tailored it to the county's needs. Now his firm is supporting a follow-up project reviewing every mile of road in the county using the policy and tool he developed, to make all the changes they determined were needed with the tool. By the end of this year, Island County's roads will be assigned based on NCHRP guidance, modified for their jurisdiction.

Chandler and his team used *NCHRP Research Report 966* and direct application of its tool in two additional locations in Washington: Shoreline and Walawala. In Shoreline, the city examined several arterials through the city. The two locations added bike lanes and improved sidewalks but have not reassessed their speed limit with those additions in mind. There Chandler applied the NCHRP tool directly, ensuring the client understood, and then made recommendations based on the suggested speed limit that came with the tool. These ideas were taken to the City Council to have justification for some of the changes desired. In Walawala, Chandler was able to pass the project on to a midlevel project manager, which he says, is a testament that this research is well done, easy to use, and easy to describe to a client, or even for a client to use on their own and set appropriate speed limits without hiring outside consultants. Brian has already presented on this twice at the ITE Conference and at the 2022 ASCE International Conference on Transportation and Development.

NCHRP Research Report 966: Posted Speed Limit Setting Procedure and Tool: User Guide provides and explains a speed limit setting procedure (SLS-Procedure) that considers factors beyond the 85th percentile speed, including both driver speed choice and safety associated with the roadway. This report also provides instructions for using an automated version of the SLS-Procedure via a spreadsheet-based Speed Limit Setting Tool (SLS-Tool).

Understanding legal requirements

Chris Cardillo, an attorney with C. S. Cardillo, P.C. used *NCHRP Legal Research Digest 74: Liability of State Departments of Transportation for Design Errors*.

Cardillo explains, "We used the publication for a wrongful death lawsuit, and it was very helpful. NCHRP does a great job, I love serious people who care. I am an attorney and had a MVA case where the person was killed. I used the information I obtained from the research digest to better understand how traffic intersections are designed and what the requirements are."

NCHRP Legal Research Digest 74: Liability of State Departments of Transportation for Design Errors covers liability insurance for design errors and omissions. It also examines public construction law, professional liability, and product warranties.

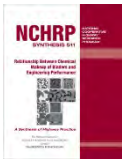
How NCHRP research products were used (continued)

Ensuring the use of appropriate asphalts

Joseph Kerstetter of the Materials and Tests Division at the Tennessee Department of Transportation used *NCHRP Synthesis 511: Relationship Between Chemical Makeup of Binders and Engineering Performance* to ensure his contractors were using the appropriate asphalts.

In combination with another resource, *NCHRP Synthesis 511* led him to use Fourier transform infrared spectroscopy (FTIR), one of the more important methods for fingerprinting asphalt materials. Kerstetter says, "At the time, we were having an issue with one of our contactors not using the appropriate asphalts. Our asphalts have to have polymer in them and in this case we were led to believe the contractor used a non-polymer. We ended up taking core samples back to the lab, running an extraction on them, putting them through FTIR, and finding lack of a specific wave length that should be there for this type of polymer, which I learned through the NCHRP publication. We ended up finding the contractor had been paving with the non-polymer the day before for a different job and did not take appropriate actions to clean out the line."

Kerstetter notes that *NCHRP Synthesis 511* is particularly helpful for those like him, a civil engineer with more knowledge and background in chemistry and asphalt. He has referenced the synthesis several times in presentations over the last few years.



NCHRP Synthesis 511: Relationship Between Chemical Makeup of Binders and Engineering Performance documents the current practices of departments of transportation (DOTs) in the selection of the chemical composition of a binder used in pavement applications.

Educating on the use of concrete pavements

Nathan Forrest is the Technical Director of the California Nevada Cement Association, a nonprofit trade association in California and Nevada that represents pouring cement producers and does a great deal of education on the topic of concrete pavements.

Forrest has used *NCHRP Synthesis 499: Alternate Design/Alternate Bid Process for Pavement-Type Selection* for a couple of reasons. His organization often encourages the use of Life Cycle Assessments (LCA) and Life Cycle Cost Analysis (LCCA) to see which concrete pavements fair better with a long-term outlook, and the AD/AB process is one way to do this. He was looking for success stories of AD/AB being used as a reference in presentations and this report supported him in doing so.

Forrest also uses NCHRP publications like this one because it is helpful to have a high-level, impartial analysis on these topics. He explains, "It is like an agency being approached with an idea by a contractor or trade association, like ours. They are much more receptive to entities that do not have a business interest in the outcome. NCHRP is an even further step or two removed from the contract outcome. It's helpful for us to have that unbiased research in an accessible and applicable form."

NCHRP Synthesis 499: Alternate Design/Alternate Bid Process for Pavement-Type Selection documents the state of the practice in alternate design/alternate bid (ADAB) for pavement-type selection by highway agencies.

How NCHRP research products were used (continued)

Informing national and local design criteria and policy

Jim Rosenow is a Design Flexibility Engineer with the Minnesota Department of Transportation and is also actively involved with AASHTO. When he gives presentations on his work, he says there are three legs of the stool serving as the research foundation and direction for the national and local design criteria and policy. Those include *NCHRP Report 785: Performance-Based Analysis of Geometric Design of Highways and Streets*, *NCHRP Research Report 839: A Performance-Based Highway Geometric Design Process* which explains more of the "meat and potatoes" of the topic and proposes next-generation technology, and *NCHRP Research Report 855: An Expanded Functional Classification System for Highways and Streets.*.

These publications served as the direction and foundation for the AASHTO Green Book as well as for the design handbook that is being redone in Minnesota. Rosenow says, "Today is the second Golden Age for road design research and development. The first in the 1930s and 40s and the second in the last twenty years. Half of that is the design community asking interesting questions and producing provocative research needs and problem statements. The other half is NCHRP stepping up and fulfilling those research needs and presenting the findings. It has been a great team effort, especially over the last twenty years, and that is why we are experiencing this second Golden Age right now."

NCHRP Report 785: Performance-Based Analysis of Geometric Design of Highways and Streets presents an approach for understanding the desired outcomes of a project, selecting performance measures that align with those outcomes, evaluating the impact of alternative geometric design decisions on those performance measures, and arriving at solutions that achieve the overall desired project outcomes.

Developing quality technical specifications

Ali Makarachi is the Director of Transportation, Planning, & Engineering at the Northeast Ohio Areawide Coordinating Agency (NOACA) and has been in the transportation field for 30 years. He is now managing a division but he continues to develop models and simulations as well.

Makarachi used *NCHRP Research Report 845: Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies* as a guide for a project that required quality technical specifications. Makarachi said, "We were looking for resources to help guide us through our work, and this ended up becoming the best publication for the job. NCHRP publications are really helpful for technical support, and I use them to see whether certain ideas are recommended or not. I also look at their publications for staffing recommendations." He finds NCHRP publications through Google, or is referred to them by colleagues, and he often keeps them as reference material for future projects.

NCHRP Research Report 845: Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies assesses policy and planning strategies at the state, regional, and local levels that could influence private-sector automated vehicle (AV) and connected vehicle (CV) choices to positively affect societal goals.

Voices from the field: The benefits of using NCHRP research products

Legal Research Digest 74: Liability of State Departments of Transportation for Design Errors

The publication was used to better understand policies and procedures to be applied to legal matters including consultations and litigation.

Chris Cardillo
C. S. Cardillo, P.C.

Research Report 835: Guidelines for Implementing Managed Lanes

Through 2026, this will be used for congestion relief, minimizing environmental impacts, right of ways impacts, developing TMC training modules, developing specific sign packages in collaboration with California Traffic Control Devices Committee (CTCDC), FHWA and Caltrans HQ.

Sam
Caltrans

Research Report 837: Performance-Related Specifications for Emulsified Asphaltic Binders Used in Preservation Surface Treatments

Using as part of follow-up research by adapting findings into an eventual national performance-related specification for asphalt emulsion residue

R Michael Anderson
Asphalt Institute

Research Report 839: A Performance-Based Highway Geometric Design Process

Used in local Performance-Based Practical Design (PBPD) guidance published in January 2018.

Anonymous
Minnesota Department of Transportation

Led to reduced construction costs of highway projects.

Jeff Jasper
KY Transportation Center

Research Report 840: A Watershed Approach to Mitigating Stormwater Impacts

Increased options for providing environmental (stormwater) mitigation.

William Fletcher

Research Report 841: Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments

We will be proposing policy changes based on this document. We are working with a major city to develop revised crosswalk marking guidance (along with RRFB and PHB application guidance) and this report is being used as a reference to the recommendations.

Michael Cynecki
Lee Engineering, LLC

Research Report 842: Mapping Heavy Vehicle Noise Source Heights for Highway Noise Analysis

Will help address equity-related issues. Results and applications of this study and other NCHRP studies are often discussed in the bimonthly AASHTO Noise Working Group meetings and TRB AEP80. Caltrans and Ohio DOT are exploring design changes based on this work as well as NCHRP 635 and NCHRP 630.

Bruce Rymer

Research Report 843: Long-Term Field Performance of Warm Mix Asphalt Technologies

Since the publication's completion, VDOT has continued to allow WMA usage, and the technology has been widely used as a compaction aid, and as such, results in an improved pavement lifespan.

Stacey Diefenderfer
Virginia Transportation Research Council

Research Report 845: Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies

Led to changes to AV legislation in 2019 and improved transit performance.

Blaine Leonard
Utah Department of Transportation

Was used in the analysis of widening of I-680 to include technology including TIRTL technology that will be used for the Automated Driving System (ADS) grant.

Randell Iwasaki
Amazon Web Services (AWS)

Helped students to think about benefits and risks of CVs and AVs, and the infrastructure to realize successful introduction of CVs and IVs on the roads Conclusion and recommendations were distributed to the class as a topic of discussion in industrial economics and in public economics.

Anonymous
Hanyang University

Voices from the field: The benefits of using NCHRP research products (continued)

Research Report 845: Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies
We are currently engaged in a research project examining the influence of consensus science and technology studies on policy making at the state and local levels of government.

Gordon Kingsley
Georgia Institute of Technology

Report 846: Improving Findability and Relevance of Transportation Information -- Volume I: A Guide for State Transportation Agencies, Volume II: Background Research
The report provided valuable background and a basis for advancing knowledge management at WSDOT.

Anonymous
Washington State Department of Transportation

Research Report 847: Variability of Ignition Furnace Correction Factors
When the report came out we compared our ignition oven operations with the report as well as notified our HMA suppliers so that they could utilize the information as well.

Anonymous
Massachusetts Department of Transportation

Aggregate correction factors just came up in relation to RAP so this document is serving as a reference as we work towards adapting our process to adequately and accurately characterize RAP.

Anonymous
Montana Department of Transportation

Research Report 849: Strand Debonding for Pretensioned Girders
Positive outcomes include confirmation of debonding layouts and confirmation of the effectiveness of bottom tensile reinforcement in shear design.

John Connal
AECOM

Research Report 850: Applying Risk Analysis, Value Engineering, and Other Innovative Solutions for Project Delivery
This publication was used to guide a taskforce that resulted in new policy and improved practice of risk and value engineering at our agency.

Zach Davis
Oregon Department of Transportation

Used in 2017 to refine and adapt some of our internal techniques pertaining to the application of Risk Analysis within the application of the Value Methodology (Value Engineering Studies).

Timothy Buckley
MENG Analysis

Research Report 854: Guide for Identifying, Classifying, Evaluating, and Mitigating Truck Freight Bottlenecks
Several examples: A consultant for the ITTS Pooled Fund Study is currently conducting a multi-state freight bottlenecks analysis; this report is providing a foundational methodology. That same consultant has also recently been contracted by FHWA HQ Freight Office to perform similar analysis at the national level. Another example, but on a smaller-scale is the Chattanooga Tennessee MPO has begun update of their federally-required Metropolitan Transportation Plan; it will include a robust freight component and will heavily utilize the report. Within the GDOT Office of Planning, my fellow staff has led work to address FHWA performance measure requirements in recent years, including freight and national highway system-related issues.

Thomas McQueen
Georgia Department of Transportation

This research was used to guide our practice in using new data products (truck speed data) in operations modeling.

Trevor Brydon
Southeast Michigan Council of Governments (SEMCOG)

Research Report 859: Consequences of Delayed Maintenance of Highway Assets
Maintenance used it as supporting information in management and funding discussions to help in reducing the amount of maintenance being delayed. The report provided some justification assistance. The report was also used in follow on Caltrans research on creating a maintenance decision tool. This research is ongoing.

Anonymous
Caltrans

Research Report 861: Best Practices in Rural Regional Mobility
Improved knowledge operations. I was a new Mobility Manager when I read this document. It gave me more ideas for how rural transit could work in my area.

Kim Lammers
Maumee Valley Planning Organization

Voices from the field: The benefits of using NCHRP research products (continued)

Research Report 862: Guide to Deploying Clean Truck Freight Strategies
Federal Highway Administration truck bottleneck and possible mitigation research used this NCHRP effort to select possible mitigation strategies to study.

Victoria Martinez
Federal Highway Administration

Research Report 863: Material Properties of Cold In-Place Recycled and Full-Depth Reclamation Asphalt Concrete
Was used in documenting practices for future generations.

Anonymous
QesPavements

As a researcher I used the publications related to Carbon Foot print, energy transition and renewable energy (geothermal energy resources).

Dornadula Chandrasekharam
Izmir Institute of Technology, Izmir Turkey

Synthesis 499: Alternate Design/Alternate Bid Process for Pavement-Type Selection
Being used to develop an NHI training course on ACMs and a FHWA DBE ACM Handbook.

Daniel D'Angelo
Applied Research Associates

City of Santa Rosa, CA successfully used AD/AB on a paving project, and other agencies have been taking note

Nathan Forrest
California Nevada Cement Association

Synthesis 502: Practices for Establishing Contract Completion Dates for Highway Projects
I have applied this knowledge to my work reviewing and managing construction contracts.

Anonymous
Greenman-Pedersen, Inc. (GPI)

Synthesis 505: Current Practices and Guidelines for the Reuse of Bridge Foundations
The technologies highlighted have been used on a bridge replacement.

Jon Bischoff
Utah Department of Transportation

Synthesis 506: Effective Utility Coordination: Application of Research and Current Practices
We were inspired to review our own practices and procedures and support research of our own coordination efforts.

Deanne Popp
Iowa Department of Transportation

Used by statewide utilities staff and utility inspectors internal to VDOT and statewide localities.

Matt Reynolds
Virginia Department of Transportation

Synthesis 507: Traffic Signal Preemption at Intersections Near Highway–Rail Grade Crossings
UDOT has used this publication to update our own operational guidelines for at-grade RR preemption. They were updated shortly after the document was published. It has been a very useful tool.

Adam Lough
Utah Department of Transportation

NCHRP work supported the development of training on the topic, “Where Highways Meet Rails” SME Course Review.

Anonymous
FHWA HOP/Resource Center

Synthesis 508: Data Management and Governance Practices
Currently using the synthesis to guide Data Governance Committee development.

Peggi Knight
Iowa Department of Transportation

Synthesis 509: Highway Worker Safety
Increased awareness of the importance of work zone safety. The Clemson University Master of Transportation Safety Administration (MTSA) Program used it for teaching students about work zone safety and as a resource.

Terecia Wilson
Clemson University

Voices from the field: The benefits of using NCHRP research products (continued)

Synthesis 511: Relationship Between Chemical Makeup of Binders and Engineering Performance

Over the past 3 years to 5 years, it gave a cost-effective way to test for polymers in asphalt binders when DSR testing is inconclusive, including forensic analysis of already placed asphalt.

Joseph Kerstetter
Tennesse Department of Transportation

Synthesis 514: Statewide and Megaregional Travel Forecasting Models: Freight and Passenger

Was used in an information exchange amongst state DOTs. FHWA is coordinating the peer exchange. Also used by the Statewide Modeling subcommittee of AEP50.

Rebekah Anderson
Ohio Department of Transportation

Web-Only Document 226: Data Visualization Methods for Transportation Agencies

This document was a valuable source for *NCHRP Synthesis 52-16: Visualization of Highway Performance Measures* that will be published next year.

Frank Broen
Metro Analytics

Web-Only Document 227: Design of Interchange Loop Ramps and Pavement/Shoulder Cross-Slope Breaks

Used in an in-progress adjustment of design guidance and criteria.

Anonymous
Minnesota Department of Transportation

Facilitated flexibility in applying previous design guidance and understanding of updated, practical safety impacts.

Anonymous
Virginia Department of Transportation

Web-Only Document 229: Methods and Technologies for Pedestrian and Bicycle Volume Data Collection: Phase 2

This publication marked the beginning of a number of pivotal studies on pedestrian exposure.

Anonymous
National Highway Traffic Safety Administration

UNO Transportation Institute has used this document extensively in helping (through the Louisiana Transportation Research Center) LDOTD to initiate multimodal data collection. The program is still in a research/pilot phase but it has been instrumental in setting up the fundamentals. The first phase of research began in 2016 developing a framework for the state, a phase 2 project implementing an initial set of continuous counters began in 2019. Outcomes of the phase 2 project are pending (project completion spring 2022).

Tara M Tolford
University of New Orleans

Web-Only Document 234: Developing a Method Selection Tool for Travel Forecasting

Used in clarifying needs and resources available for various analyses

Maria Aranguiz
California Department of Transportation

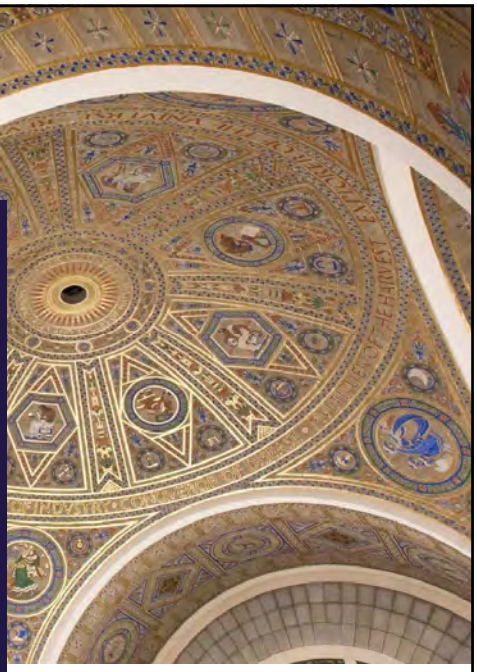
Web-Only Document 243: Recommended Guidelines for Prefabricated Bridge Elements and Systems Tolerances and Recommended Guidelines for Dynamic Effects for Bridge Systems

Supports the Structures Division ABC Program.

Carmen Swanwick
Utah Department of Transportation

NATIONAL ACADEMIES Sciences Engineering Medicine

TRB TRANSPORTATION RESEARCH BOARD



Update on Critical Issues in Transportation 2023

Susan Shaheen, Chair, SPPR

January 11, 2023

1

Societal Goals

The overall purpose of our transportation system is to help **develop and support a thriving society.** In order to accomplish this, we must accomplish the following goals:

- Climate Change Mitigation and Resilience
- Promoting Equity
- Increasing Safety
- Advancing Public Health
- Building and Sustaining a Strong, Competitive Economy

2

Climate Change

The transportation system is both a major contributor to climate change and a major opportunity to address it. Not only must the system change to limit further climate change, but it must adapt to that which is already underway. However, as an industry with engrained patterns and dependent on energy-dense petroleum products, change will not be easy or immediate.

- What are the most consequential and cost-effective public policy strategies and research needs to move the transportation sector toward net zero carbon emissions while considering the full life cycle environmental consequences of these strategies?
- What parts of the transportation system are most vulnerable to major disruptive events and how can risk-based resilience management be incorporated into transportation planning and decision making?
- How can results from climate models be translated into changes of infrastructure design standards to account for weather events that are sudden and severe, such as from wildfires and heavy wind and rain events, and that are gradual, such as sea level rise and changing precipitation and temperature patterns?

3

Equity

Inequitable decisions, enforcement, and planning affect all aspects of society, including the transportation system. Past decisions about infrastructure and policy have reinforced structural racism and limited the opportunities for some people to thrive, though the transportation system is also unique in its ability to provide access to opportunities.

- How do we ensure that environmental justice is a decision factor rather than simply a procedural requirement?
- Which transportation technologies and policy interventions, under which settings, would be most effective and affordable for enhancing access to employment opportunities, health care, shopping, and education? For instance, which transportation policies hold the most promise for meeting the needs of growing low-income populations and those with disabilities in suburban and exurban areas?
- As transportation facilities are expanded and improved to serve a growing population and economy, how can we best ensure that communities of color and low-income communities receive adequate service and that any adverse effects from new facilities or expanded operations do not fall disproportionately on them?
- Who is most impacted by policies that discourage automobile ownership and use? Are some demographic groups disproportionately impacted by policies intended to affect mode shares and travel activity?

4

Safety

Safety is a stated top priority of all transportation modes. It is inextricably intertwined with all other goals, as the system is not equally safe for all, is impacted by a changing climate, and affects the health of individuals who both use and are located near the system.

- What is the effectiveness of a safe systems approach to traffic safety and how can widespread adoption be encouraged? Also, what strategies can be most effective in reducing the growing number people outside of cars being killed and injured?
- How can regulators and commercial transportation be incentivized to strengthen their safety management systems and safety cultures in ways that will encourage transportation organizations to achieve safety levels beyond what can be realized through compliance with existing rules and standards? How can the regulatory framework for transportation become more encouraging of safety performance as opposed to focusing on enforcement?
- How can the public sector foster technological innovation and steer the transition to connected and automated vehicles (CAVs) to improve safety during the transition period? Which issues will need to be addressed to reduce risk when semi-automated and automated vehicles operate in mixed traffic with drivers of conventional vehicles? How much improvement in safety can be achieved through CAVs and other technology improvements?

5

Public Health

Recent years have highlighted the importance of robust public health to a thriving society, in addition to the inequities inherent in access to necessary health services. Not only are infectious diseases relevant to societal health, but so are daily activity, clean air and water, and access to healthcare systems. The transportation system has the potential to affect all of these factors.

- How can public health planning and outcomes, along with public health policy makers, be better incorporated into transportation planning and decision making? What are appropriate metrics for measuring health outcomes as part of the transportation planning process?
- Which pollution mitigation measures can be justified and which measures need more research to reduce health risks for those living near major transportation facilities?
- What are the risks of becoming infected, whether with covid-19 or any other virus, while traveling by shared modes? How do protection and mitigation measures, including improved ventilation and queuing models, change these risks?
- With what we have learned about alternatives to traditional healthcare-oriented transportation, such as telehealth through broadband access, are these alternatives substitutes or complements for policies focused on providing mobility for health services, including providing access to hospitals?

6

Economy and Global Competitiveness

Transportation networks are closely tied to economic productivity and the ability to safely and efficiently move both goods and people. In a closely-connected global economy, transportation's ability to provide free flow of people, goods, and ideas affects social progress, safety, health, and equity.

- Which policy options can and should be exercised to achieve net social benefits from automated vehicles and other evolving technologies?
- How can financial, institutional, and competitive barriers be overcome to reduce nationally significant bottlenecks at large-scale, complex transportation facilities?
- How will changes in sourcing of materials and parts, as well as the location of manufacturing, impact the transportation system?
- How can society provide adequate capacity for the anticipated volume of future freight in the most cost effective and responsive way? What are the net effects on traffic and emissions of increased e-commerce?
- How should vulnerabilities in the transportation portion of the supply chain be addressed so as to minimize the impact of disruptive events?

7

Financing and Governance

- How do we transition to a new financing system that will work with electric vehicles, declining power of the gas tax, and increased financial needs to operate and maintain aging infrastructure – especially considering the international nature of travel and supply chains?
- How can we best address decisions that affect a national network but that are often made at a state or local level, whether by government alone or as a partnership with the private sector?
- How can planning and funding decisions be changed from being largely modally-based programs to a multimodal systems basis?

8

Workforce

- How do we make transportation an attractive option for those entering the workforce, given that we are facing shortages of both operators and professional staff in all modes?
- How do we learn from other fields and retrain the existing workforce to use, maintain, and deploy new technologies in transportation?
- What policy issues are raised and need to be addressed to respond to changes in labor dynamics that are happening across industries?

9

Technology

- How do we regulate new transportation-related technologies, given the challenges that government regulators have in keeping up with changes in technology?
- How do we encourage development of new technology, data, and methods to improve transportation decision making and operations while still protecting privacy and safety for all users?
- Who should own data generated by vehicles and the transportation system, and how can the transportation industry keep up with IT development to ensure that existing systems' data storage and cybersecurity remain safe?

10

Physical Infrastructure

- How can we use new materials, construction methods, and management strategies to address the higher costs of building, maintaining, and operating infrastructure in the US compared to other nations?
- How do we integrate new technologies (e.g., CAVs, broadband, EV charging) into our existing and planned infrastructure?
- How do we rethink existing incentives and policies to ensure that adequate investment is made in maintaining existing infrastructure assets?

11

Travel Demand

- What will be long term changes in travel demand in light of telework, changes in the location of economic activity, demographic changes, and new and evolving mobility options and how should we deal with uncertainty associated with future travel demand?
- How can we best understand how telecommunications is changing demand today and the implications for future demand?
- How can growth in demand for movement of both people and goods be accommodated, especially in rapidly growing areas, given the full range of social goals?

12

TRB

TRANSPORTATION RESEARCH BOARD

MEMORANDUM

TO: TRB Executive Committee Members

FROM: Neil J. Pedersen, Former TRB Executive Director

DATE: December 19, 2022

SUBJECT: Metrics for Critical Issues

During the discussions about the TRB strategic plan at the June 2022 Executive Committee meeting, Drew Kodjak proposed that we develop a set of high-level metrics related to the transportation system that TRB would track and update on a regular basis. At its October 2022 meeting, the SPPR concluded that the most appropriate way to select, organize, and present such a set of metrics would be to have a limited set of metrics related to each of the topics that will be in the new edition of *Critical issues in Transportation*.

In is important that metrics be selected for which there are data from reliable, credible sources. The metrics should help provide high-level context for the challenges being faced in the critical issue topic area. Although it is not possible in all cases, it is desirable to select metrics for which trends can be shown over several years.

Based on input from SPPR members and additional online research, I identified a set of proposed metrics for each topic area. The proposed metrics and the data sources for each metric are included in the attachment to this memorandum. These metrics are being presented as a starting point for discussion. We are hoping that with the expertise that we have available among Executive Committee members that we can identify additional or alternative metrics and/or data sources for the proposed metrics for each topic area. Our goal is to have a limited number (two to three) of high-level metrics for each topic area. The data would be shown in most cases in graphical format in the *Critical Issues in Transportation* document.

I look forward to our discussion of this topic at the January 11-12 Executive Committee meeting.

Attachment

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CANDIDATE METRICS FOR CRITICAL ISSUE TOPICS

Safety

- Fatalities by mode of transportation
  https://www.bts.gov/content/transportation-fatalities-mode
- # of fatalities and fatality rate on U.S. roadways, 2011-2021
  https://www-fars.nhtsa.dot.gov/Main/index.aspx

Climate Change

- % 2020 greenhouse gas emissions by sector
- % 2020 greenhouse gas emissions by mode of transportation
  https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions
- Weather and climate disasters where overall damage/cost reached or exceeded $1 billion by decade (adjusted for inflation)
  https://www.ncei.noaa.gov/access/billions/

Public Health

- Population in non-attainment areas for transportation-related pollutants
  https://www.epa.gov/green-book
- Medical costs of traffic crashes
  https://www.cdc.gov/transportationsafety/statecosts/index.html

Equity

- % of household income spent on transportation by income quintile
  https://www.transportation.gov/sites/dot.gov/files/2022-04/Equity_Action_Plan.pdf
- Average commute time by transit versus auto
  https://www.transportation.gov/sites/dot.gov/files/2022-04/Equity_Action_Plan.pdf

Economy and Global Competitiveness

- Value of imports and exports through U.S. ports
  https://www.bts.gov/freight-indicators#containerized-imports
  https://www.bts.gov/freight-indicators#containerized-exports

- Producer Price Indexes for Select Transportation Services
  https://data.bts.gov/stories/s/Transportation-Economic-Trends-Transportation-Cost/2yqq-baqd/

Financing and Governance

- Government Transportation Expenditures by Level of Government and Mode https://data.bts.gov/stories/s/Transportation-Economic-Trends-Government-Transpor/hjpc-j5px#government-transportation-expenditures-by-level-of-government-and-mode
- Public and Private Sector Investment in Infrastructure and Equipment https://www.bts.gov/topics/transportation-and-economy/investment-transportation-assets-0

Workforce

- Public and private sector employment by mode 1993- 2022 https://data.bts.gov/stories/s/Employment-Transportation-and-Warehousing-Sector-T/2z63-wprv/
- % of transportation workers over 55 by mode https://data.bts.gov/stories/s/Transportation-Economic-Trends-Transportation-Empl/caxh-t8jd/

Technology

- # of automated, autonomous, and electric vehicles https://www.iea.org/reports/electric-vehicles
- App based Micromobility usage https://nacto.org/2022/12/01/half-a-billion-rides-on-shared-bikes-and-scooters/

Physical Infrastructure

- % highway bridges in fair or poor condition https://www.fhwa.dot.gov/BRIDGE/nbi/no10/condition22.cfm
- % of National Highway System Pavement Miles in Fair or Poor Condition https://data.bts.gov/dataset/National-Highway-System-Pavement-Condition/jasd-h882
- Transit vehicles, track, and tunnels in poor condition https://infrastructurereportcard.org/cat-item/transit-infrastructure/#:~:text=Transit%20vehicles%20and%20physical%20infrastructure%20must%20both%20be,for%20the%20system%20to%20perform%20to%20expected%20levels.

Travel demand

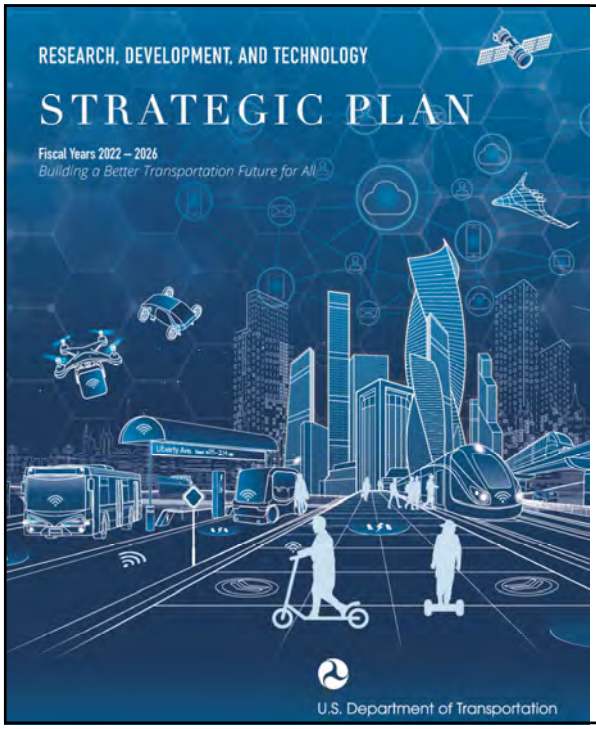
- Highway passenger travel
  https://data.bts.gov/Research-and-Statistics/Highway-Passenger-Travel-Seasonally-Adjusted-/9frm-w8cv
- Transit Ridership
  https://data.bts.gov/stories/s/5er7-y3zn#transit-ridership
- U.S. Air Carrier Passenger Travel
  https://data.bts.gov/stories/s/5er7-y3zn#u.s.-air-carrier-passenger-travel
- Rail Freight Carloads and Intermodal Units
  https://data.bts.gov/stories/s/5er7-y3zn#rail-freight-carloads
  https://data.bts.gov/stories/s/5er7-y3zn#rail-freight-intermodal
- Truck Tonnage
  https://data.bts.gov/stories/s/5er7-y3zn#truck-tonnage

U.S. DOT Research, Development and Technology (RD&T) Strategic Plan (FY 2022-2026)

- Building a better transportation future for all

Alasdair Cain
Director of RD&T Coordination
Office of the Assistant Secretary for Research and Technology, U.S. DOT

1



Overview

- ✓A new U.S. DOT Research, Development and Technology (RD&T) Strategic Plan that guides our RD&T activities for the next 5 years.

Purpose

- ✓Central guiding document for DOT RD&T activities, describing the research to practice activities needed to accomplish our strategic goals and meet statutory requirements over the next 5 years.
- ✓Set the research vision for the future of the nation's transportation system.

Status

- ✓Draft plan now under final review prior to public release.

2

Strategic Context / Statutory Mandates

DOT Strategic Goals (FY 2022-2026)

** Organizational Excellence not included in the RD&T Plan*

49 U.S.C Chapter 65 (Research Planning) Transportation Research Primary Purposes

- Promoting safety
- Improving mobility of people and goods
- Reducing congestion
- Improving the durability and extending the life of transportation infrastructure
- Preserving the existing transportation system
- Preserving the environment
- **Reducing transportation cybersecurity risks***

** Added in the Bipartisan Infrastructure Law (BIL)*

3

3

National Transportation Research Vision

*"We envision a people-centered transportation system that provides safe, accessible, reliable, equitable, and sustainable transportation **for all** through purpose-driven research and innovation for this and future generations"*

4

4

Research Priorities and Grand Challenges

STRATEGIC GOALS	RESEARCH PRIORITIES	GRAND CHALLENGES
Safety	• Human Factors • Data-Driven System Safety • Cybersecurity	**Zero Fatalities:** Advance a future without transportation-related serious injuries and fatalities.
Economic Strength and Global Competitiveness	• Advanced Asset Management • System Performance • Resilient Supply Chains • Creating Pathways to Good Quality Jobs	**Resilient Supply Chains:** Create a multi-modal freight system that can withstand and rapidly recover from severe disruptions.
Equity	• Equity & Accessibility Assessment • Mobility Innovation • Wealth Creation	**Equitable Mobility for All:** Create an equitable transportation system that provides safe, affordable, accessible, and convenient mobility options for all users.
Climate and Sustainability	• Decarbonization • Sustainable & Resilient Infrastructure	**Net-Zero Emissions:** Create a transportation system that supports an economy with net-zero greenhouse gas emissions.
Transformation	• Integrated System-of-Systems • Data-Driven Insight • New and Novel Technologies	**The Future Transportation System-of-Systems:** Develop connected intelligent infrastructure that provides people-centered mobility.

5

U.S. DOT Research, Development and Technology (RD&T) Strategic Plan (FY 2022-2026)

- Building a better transportation future for all

Alasdair Cain
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6

TRANSPORTATION RESEARCH BOARD

December 16, 2022

MEMORANDUM

TO: Members, TRB Executive Committee
FROM: Russell Houston
SUBJECT: January 11 & 12, 2023, Policy Session on Successful Megaprojects

Megaprojects are "large-scale, complex ventures that typically cost more than $1 billion US, take many years to build, involve multiple public and private stakeholders, are transformational, and impact millions of people," according to Bent Flyeburg of Oxford University. Projects eligible for funding through the U.S. Department of Transportation Mega Grant Program must be large, complex projects that are difficult to fund by other means and likely to generate national or regional economic, mobility, or safety benefits.

The Project Management Institute (PMI) and many others have conducted past studies that have raised concern about the frequency with which transportation megaprojects experience large cost overruns, delays in completion dates, misunderstanding of expectations, or all of these. Experts also cite scope expansion as an Achilles heel of megaprojects. However, these outcomes may not have to be inevitable. PMI also observed that what distinguishes successful megaprojects are three major characteristics: a clear strategic vision, total alignment, and adapting to complexity.

This session will explore the positive attributes of successful megaprojects and the characteristics that should be emulated in order to deliver a successful megaproject across multiple infrastructure modes. The session will particularly focus on attributes beyond just on time and on budget delivery of a project as a measure of success, e.g. meeting broader community and societal goals, enhancing environmental stewardship, successfully addressing equity issues, and community and industry acceptance.

A detailed agenda for the session is below. Brief biographies on our panel members are included after the agenda.

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Session Agenda

Time (Eastern)	**Wednesday, January 11, 2023**
11:15 a.m.	Shawn Wilson, Secretary, Louisiana Department of Transportation and Development; and Vice Chair, TRB Executive Committee *Welcome and Session Introductions*
11:20 a.m.	Stephanie Pollack, Deputy Administrator, Federal Highway Administration *The US DOT's Programs to Help Support Megaprojects*
11:35 a.m.	Luisa Paiewonsky, Senior Policy Advisor for Transportation, White House Infrastructure Implementation Team; and Samantha Silverberg, Special Assistant to the President for Transportation and Infrastructure, National Economic Council Summary: October 2022 White House Summit on Accelerating Infrastructure
11:50 a.m.	Q & A
12:05 p.m.	**Break for Lunch and Chair's Plenary Session** Marriott Marquis, Shaw; and Washington Convention Center, Ballroom ABC
3:30 p.m.	Policy Session Reconvenes
3:32 p.m.	Eric Shen, Founder, Shen & Associates, LLC; and Former Director of Transportation Planning, Port of Long Beach *The Gerald Desmond Bridge project – Lessons Learned*
3:52 pm	Susan Shaw, Megaprojects Director, Northern Virginia District, Virginia DOT *Virginia Megaprojects – Lessons Learned*
4:12 p.m.	Jim Gray, Secretary, Kentucky Transportation Cabinet; and Jack Marchbanks, Director, Ohio DOT *The Brent Spence Bridge Corridor Project – Lessons Learned*
4:32 p.m.	*Plenary Discussion* – Moderated by Shawn Wilson
5:55 p.m.	Shawn Wilson *Concluding Remarks*
6:00 p.m.	Shawn Wilson *Adjourn*
Time (Eastern)	**Thursday, January 12 2023**
8:30 a.m.	*Plenary Discussion* – Moderated by Shawn Wilson
9:00 a.m.	End of Policy Session Discussion

Policy Session Panelists Biographies

Eric Shen
Executive Director, Eco-Rapid Transit;
Founder, Shen & Associates, LLC; and
Former Director of Transportation Planning, Port of Long Beach

Eric Shen is executive director of Eco-Rapid Transit, also known as the Orangeline Development Authority, a joint powers authority created to pursue development of a transit corridor in Souther California.

With nearly three decades of distinguished achievements, Mr. Shen most recently served as Chief Engineer/Director of Capital Projects for the San Gabriel Valley Council of Governments and oversaw nearly $1 billion of infrastructure project delivery throughout the subregion. Mr. Shen's professional tenure also includes the Mid-Pacific Gateway Director in Maritime Administration of the U.S. Department of Transportation, the Transportation Planning Director of the Port of Long Beach, and the Transportation Planning & Development Manager of the City of Pasadena.

Prior to joining SGVCOG, Eric served as the Mid-Pacific Gateway Office Director, Maritime Administration (MARAD) of the U.S. Department of Transportation (USDOT). Eric was responsible for delivering federal assistance to 16 port authorities and 25 commercial deep-water and river ports in five Western States and three U.S. territories. During his tenure at the Port of Long Beach, Eric successfully negotiated a multi-agency agreement to fund the Gerald Desmond Bridge Replacement Project.

Eric received a BSCE with honors and a MSCE from the University of California, Irvine.

Susan Shaw
Megaprojects Director, Northern Virginia District, Virginia DOT

Susan Shaw leads the Virginia Department of Transportation Megaprojects Office in Northern Virginia. She oversees over $5 Billion worth of projects that include Express Lanes on I-66 Outside the Beltway, I-495, and I-95.

Shaw has over 30 years' experience, a BS Civil Engineering (University of Virginia), and is a Professional Engineer, Certified Construction Manager, and is certified by Design Build Institute of America. Prior to joining VDOT, she volunteered as an Engineer for the US Peace Corps in Thailand, and later worked as a design consultant in Northern Virginia.

In 2017, she received AASHTO's Alfred E. Johnson Achievement Award, and in 2022, she received VDOT's Outstanding Achievement Award for leadership.

Jim Gray
Secretary, Kentucky Transportation Cabinet

Jim Gray is the former mayor of Lexington, during his eight years as mayor, Gray was known for getting things done.

Facing immediate deficits, on day one as mayor, Gray righted Lexington's financial ship through a series of major reforms which included reducing the city's employee health insurance costs while at the same time improving employee satisfaction. His reform of the police and fire pension system preserved the retirements of more than 1,000 retirees while saving millions of dollars for the city. Those savings resulted in investments in public safety. Today, Lexington is ranked the 3rd safest city in the US.

At the start of his career, Gray earned a B.A. from Vanderbilt University and then came home to help grow his family's construction firm, Gray Construction, accepting a Loeb Fellow appointment at Harvard along the way. Gray Construction is today ranked among the top five US builders within major industry sectors including manufacturing, automotive, food and beverage, and distribution.

Jack Marchbanks
Director, Ohio Department of Transportation

Jack Marchbanks was appointed Director of the Ohio Department of Transportation in January 2019 by Ohio Governor Mike DeWine. As Director, he provides strategic leadership to the people serving Ohio's most asset laden infrastructure agency. The Ohio Department of Transportation is "owner-operator" of an inter-modal system worth more than $120 billion. ODOT is responsible for the second largest inventory of bridges and the fifth largest interstate system in the nation.

In his prior role as Assistant Director for Business and Human Resources from 2017 to 2018, he was responsible for the overall management of the department's 5,000 employees and the development of its $3.7 billion budget. He directed the statewide administrators of the agency's finance, human resources, information technology, legal, and communications divisions, as well as the opportunity, diversity, and inclusion programs.

Marchbanks also served as District 6 (central Ohio) Deputy Director from June 2016 to July 2017. He previously served in the same position from May 1997 to January 2007. During that almost ten-year long tenure at District 6's helm, he oversaw the investment of more than $1.7 billion in surface transportation infrastructure improvements.

Marchbanks earned a Doctor of Philosophy degree from Ohio University in May 2018. He holds an M.B.A. from Xavier University in Cincinnati and a master's degree from Clark-Atlanta University. He is a graduate of the University of Dayton, where he earned his bachelor's degree in Political Science.

TRANSPORTATION RESEARCH BOARD

December 8, 2022

MEMORANDUM

TO: Members, TRB Executive Committee
FROM: Russell Houston
SUBJECT: June 2023 Executive Committee Policy Session

June 2023, Policy Session – *Action*

The Subcommittee on Planning and Policy Review (SPPR) recommends that the Executive Committee explore traffic safety during the June 2023 Policy Session. Potential components for a session could explore disproportional representation of some ethnicities in traffic fatalities, the pandemic's role in causing the overall increase in serious traffic crashes, and potential ways to address those causes. This memo includes a list of TRB's critical issues (Attachment A) as well as a list of all past policy session topics (Attachment B) to aid in the committee's discussion on a topic for the June 2023 session.

Suggested Traffic Safety Policy Session

The U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) reported 42,915 traffic fatalities during 2021, an increase of 10.5% over 2020 and 18.9% above 2019 levels. Pedestrian deaths in 2021 were at their highest in 40 years: approximately 7,500 people or 20 per day. Millions more are injured.

According to preliminary research by NHTSA, people who continued to drive during the pandemic may have engaged in riskier behavior including speeding, failure to wear seat belts, and driving under the influence of alcohol or other drugs. It appears that this risky behavior has continued as the pandemic has subsided.

Historically, these are some of the most frequently cited causes of traffic fatalities. For example, NHTSA estimated 47% of passengers killed in 2018 were not wearing a seat belt, and the Center for Disease Control and Prevention (CDC) reported that drugs other than alcohol are involved in 16% of motor vehicle crashes.

A report released in June 2021 by the Governor Highway Safety Association (GHSA), which analyzed data for the five-year period 2015-2019, found that traffic crash fatalities

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disproportionately affect Black, Indigenous and People of Color. Highlights of the report's findings include:

- Compared with all other racial groups, American Indian/Alaskan Native persons had a substantially higher per-capita rate of total traffic fatalities.
- Black persons had the second highest rate of total traffic deaths.
- White, Native Hawaiian/Other Pacific Islander, and Hispanic persons had somewhat similar per capita rates of total traffic fatalities.
- Compared with all other racial groups, Asian persons had a substantially lower per-capita rate of total traffic deaths.

Richard Retting, director of TRB's Behavioral Traffic Safety Cooperative Research Program, conducted the literature review and data analysis for the GHSA report in his previous role as Director of Safety & Research at Sam Schwartz Consulting.

According to TRB's Racial Equity Addendum to Critical Issues in Transportation, critics of transportation planning and investment priorities, particularly in urban areas, have pointed to patterns of decision making indicative of racial bias resulting in, among other things, safety hazards. The Addendum notes that curbing racism in the decision-making processes and power structures across all levels of government is essential to equitable transportation planning and investment choices and understanding racial bias in transportation institutions is a critical step.

This potential policy session could explore:

1. The disproportional representation of Black, Indigenous, and People of Color (BIPOC) in traffic fatalities;
2. What is the pandemic's role in causing the overall increase in serious traffic crashes, particularly in BIPOC communities; and
3. How to address causes from a research and policy perspective across all levels of government.

The session could potentially draw upon speakers from states that actually saw a recent improvement in traffic safety to see if they can provide lessons learned.

Attachment A

TRB Critical Issue

Transformational Technologies

1. Role of policy in development of connected and automated vehicles
    a. Policy options to manage travel, congestion and emissions, especially from TNCs.
    b. Policies to achieve net social benefits
    c. Transition period issues with mixed traffic
    d. Needed public sector investments, especially infrastructure
2. Shared mobility services
    a. Relationship to transit
    b. Regulatory issues between taxis and TNCs
3. Balancing state and federal safety oversight; sharing of information from pilots
4. Government oversight of artificial intelligence
5. Behavioral responses
    a. # of trips, mode, willingness to pool
    b. Auto ownership
    c. Residential & commercial location
    d. Safety issues with semi-automated vehicles
    e. Public acceptance of risk with automated vehicles

Serving a Growing and Shifting Population

6. Mega-region internal travel and connections
7. Growth in travel in small/medium cities and in suburban/exurban areas
8. Rural access needs in light of decreasing population
9. Millennial and baby boomer needs, especially in low density areas

Energy/Sustainability

10. Reducing greenhouse gas emissions
11. Policies to move to more sustainable energy sources for transportation
12. Electric powered transportation; impacts on electric grid
13. Sustainability considerations in decision making

Resilience/Security

14. Adding security while maintaining mobility
15. Risk management approach to resilience
16. Adaptation to severe weather events and climate change
17. Security risks from drones
18. Cybersecurity
19. GPS vulnerabilities
20. Evacuation issues

Safety/Public Health

21. Adopting proven and new safety technologies

22. Semi-automated vehicle safety issues
23. Public health's linkage to transportation
24. Mitigation of pollution from transportation
25. Operator fatigue management
26. Unmanned aircraft safety issues
27. Safety management and safety culture
28. Impacts of marijuana and other drugs
29. Pedestrian and cyclist deaths and injuries

Equity

30. Equity impacts and opportunities of new technology services
31. Access issues for the economically disadvantaged
32. Environmental justice issues of equitable access and impacts of new facilities
33. Equity issues of alternative finance mechanisms
34. Equity issues of toll financing

Governance

35. Devolution's impact on funding and on interstate and international commerce
36. Addressing nationally significant bottlenecks
37. Megaregion and multi-jurisdictional decision making
38. Roles in providing mobility as a service
39. Implications of transformational technologies on institutions
40. Governance of data

System performance and Asset Management

41. Managing for system performance
42. How much can new technology substitute for adding capacity; ensuring new technology is incorporated in new infrastructure
43. Investing in preservation and maintenance; asset management and life cycle cost decision making
44. New materials, construction techniques, and maintenance approaches

Funding/Finance

45. Role of federal funding; how to pay for federal funding
46. Building support for raising user fees (e.g. fuel tax); efficient, effective, sustainable, and equitable user fees; subsidizing modes that cannot entirely rely on user fees (e.g. transit, inland waterways)
47. Responding to decreases in revenues due to improved energy efficiency and electric vehicles; mileage-based user fee issues

Goods Movement

48. Providing for growth in freight; changes in freight demand
49. Reducing emissions from freight
50. Worker shortages in freight
51. Technology changes in freight
52. Changes in how packages are delivered

53. Truck size and weight issues
54. Impacts of mega-vessels on ports and channels
55. Distribution of domestic energy

Institutional and Workforce Capacity

56. Local institutional capacity to address current issues
57. Preparing the workforce for new technologies and future issues
58. Attracting underrepresented groups into transportation
59. Displacements of workers by technology

Research and Innovation

60. Learning from new technology experiments and sharing lessons learned
61. Impact of rapid development and deployment of new technology on traditional research
62. Accelerating public sector research and innovation
63. Development and retention of the teachers and researchers of tomorrow

Attachment B

Past Session Topics

Date	Topic	Rapporteur
1/88	Current Status & Future Outlook for Air, Rail, Trucking, Highway, Urban, & Water Transportation	Hoel & Koltnow
6/88	Small Group Discussion of Exec. Comm. Policy Initiatives	
1/89	Marine & Intermodal Transportation	Hoel
6/89	Transportation Response to Problems of Air Quality	Paaswell
1/90	High-Speed Ground Transportation	Walton
6/90	Relationship Between Transportation & Economic Development	Wolpert
1/91	The Environmental Imperative, Fuel Use, & Surface Transportation Funding	Sussman
6/91	Air Passenger Transportation: Congestion Pricing for Airports	Harris
1/92	Transportation Policy Research Priorities for the 1990s (USDOT Associate Administrators for Policy)	Lamm
6/92	International Economic Development & U.S. Transportation	Walton
1/93	U.S. & International Efforts to Assist Russia & Other Former Soviet Republics on Transportation-Related Problems	Borrone
6/93	Implications of U.S. Defense Conversion for Transportation	DeLong
1/94	Transportation Policy Priorities to Support a National Transportation System	Millar
6/94	The "Green" Car: Technological, Institutional, & Environmental Issues	Yerusalim
1/95	Intermodal Freight Transportation: Barriers, Linkages, and New Technologies	Wormley
6/95	Financing Transportation in the Post-ISTEA Era	Kelly
1/96	ISTEA: Impacts and Issues for Reauthorization	Wachs
6/96	Cross-Border Transportation Issues	Martinez
1/97	Institutional Arrangements for Transportation: Impacts of Changing Roles	Sterman
6/97	Effects of the Federal Role on the U.S. Aviation System: Current Status, Prospects for & Barriers to Change	Riniker
1/98	Zero-Car Households: Strategies To Improve Mobility & Accessibility for the Carless	Fitzgerald
6/98	Land Use and Transportation: Relationships and Trends	Gilbert
1/99	The Clean Air Act: Goals, Issues, & Impacts on Transportation	Winstead
6/99	Industry Consolidation: Regulatory Issues, Cross-Modal Comparisons	McCaig
1/00	Approaches to Achieving Advances in Transportation Safety	Canby

Date	Topic	Rapporteur
6/00	Transportation Implications of E-Commerce and Telecommunications Technology	Giuliano
1/01	A System Wide View of Transportation Finance	Campbell
6/01	Freight Transportation in the U.S. Economy: Capacity Issues and Operating Challenges	Wilding
1/02	U.S. Petroleum Dependence: Issues and Prospects for the Transportation Sector	Frosch
6/02	Work Force Development and Staffing Needs in Transportation	Meyer
1/03	Decision-Making Processes for Public Sector Transportation Investments	Kirby
6/03	Transportation Security Initiatives: Balancing Public Perceptions, Political Expectations, and Practical Applications	Rebensdorf
1/04	The Impact of Global Warming on Transportation	Kanafani
6/04	Shifting Patterns and Growth of Global Trade: Implications for the Transportation System	Shucet
1/05	Innovative International Roadway Safety Initiatives	McNeil
6/05	How Should America Pay for Transportation?	Morris
1/06	Raising the Public Profile of Transportation	Butler
6/06	20th Century Institutions Mismatched to 21st Century Missions	Miller
1/07	The Energy Component of Transportation Sustainability	Gittens
6/07	Innovative Transportation Performance Measures	Garber
1/08	Public-Private Partnerships: With an Emphasis on Equity	Rosenbloom
6/08	The Role of Transportation in Climate Change Mitigation	Johns
1/09	Key Issues in Transportation and Climate Change	N/A
6/09	Issues and Perspectives on Water Transportation	Scalzo
1/10	Dialogue with the U.S. DOT Deputy Secretary	
6/10	Definitional Issues Related to the Concept of Livability	Clark
1/11	Multimodal Freight Policy, Corridor-Level Priorities, and Funding Strategies	Conti
6/11	Financing and Funding Transportation in a Transitional Period	Seltzer
1/12	Inland Waterway Transportation: Issues, Challenges, Opportunities	Hancock
6/12	New Information and Telecommunication Technology Applications to Transportation: Opportunities and Challenges	Sperling
1/13	International Research Activities: Issues, Priorities, and Lessons Learned	Sinha
6/13	Energy: Transportation Fuels and Sources	Hendrickson
1/14	Session on Aviation Issues: Challenges and Opportunities	Arroyo
6/14	Connected Vehicles—A Pathway to Automation	Washington

Date	Topic	Rapporteur
1/15	Big Data	Fotheringham
6/15	The Intersection Between Urban Goods Movement, Smart Growth, and Public Health	Breakouts
1/16	Advancing Public Health Through Transportation: Challenges, Opportunities, and Lessons Learned	Breakouts
6/16	Cyber Security in an Age of Transformational Technology	Breakouts
1/17	Climate and Extreme Weather Resilience	Houston
6/17	Smart Cities and Transportation	Breakouts
1/18	Public Transportation: Challenges and Opportunities	Breakouts
6/18	Electric Vehicles	Breakouts
1/19	Transportation's Role in the Wellbeing of Rural Communities	Breakouts
6/19	Distraction	Breakouts
1/20	Artificial Intelligence	Breube
8/20	Urban Air Mobility	Virtual
1/21	The Impact of COVID-19 on Personal Mobility and Social Equity	Virtual
7/21	Racial Equity	None
1/22	Decarbonization of the Transportation Sector	None
6/22	Reimagining Good Movement	None

TRB Technical Activities Division Read-Ahead Information for TRB Executive Committee
December 2022

Report by Ann Brach, Division Director

Division-Wide Items

TAC Priorities

At its June 2022 meeting, the Technical Activities Council (TAC) engaged in a discussion of "key issues" being addressed by the standing committees. The annual effort by TAC develops ideas that may eventually find their way into TRB's Critical Issues document. The committee reports in June were voluminous but some highlights include:

- Recognizing and addressing the irreducible complexity of transportation as a system of systems which is inseparable from the economy, political life, public health, international relations, etc. while also responding to the demand for simplification of research results for rapid implementation.
- Implementing new sources of data (e.g., crowd sourcing) and new technologies (e.g., artificial intelligence, machine learning) while addressing issues such as: data quality, use of data in decision making, workforce expertise in data, security and privacy, potential biases in available data.
- Developing workable strategies for decarbonization, especially electrification while addressing the impacts on all aspects of transportation (planning, design, operations, asset management, funding, etc.) in all modes.
- Improving transportation and manufacturing resilience in response to all types of threats related to public health, international relations, cybersecurity, climate change, etc. by focusing more on the necessary societal outcomes and less on subsystem efficiency and optimization.
- Ensuring equity through serving underserved populations, including aging and differently-abled populations, and by dealing with DEI issues in the workplace, such as harassment driving women out of some fields.
- Addressing workforce shortages in all modes and all types of transportation positions, including associated jobs (e.g. airport food concessions), as well as developing expertise in new technologies and data analysis.
- Addressing the surge in highway deaths during COVID, which has not yet abated.

Sponsor Agreements

With the support of Gary Walker and the Finance Office staff, TAD negotiated or renewed sponsor agreements with the following agencies and organizations:

- Federal Aviation Administration
- Federal Railroad Administration
- National Highway Traffic Safety Administration
- Office of the Secretary of Transportation-Research
- American Public Transportation Association

Other sponsor agreements are either multi-year or were completed at the end of 2021 for calendar year 2022 sponsorship.

Staff

- During 2021 and 2022 TAD carried out a staff restructuring into four offices: Program, Publications and Outreach, Meetings, and Operations. The remainder of this report is structured around these four teams, whose scopes and directors are also explained below. The goals of this restructuring are to better focus each group of staff on the tasks directly associated with their responsibilities, provide TAD leadership with more opportunity for longer-term strategic planning, improve training and professionalism, and facilitate individual development and unit succession planning.
- Between early 2020 and early 2023, one-third of TAD staff has turned over. Almost 50% of Annual Meeting logistics staff will be experiencing their first TRB Annual Meeting in 2023.
- As many organizations are experiencing, filling vacancies is more difficult than usual.

Program

The Program Office in TAD is responsible for the volunteers and all the technical programs for which the volunteers provide content, including the Annual Meeting and other conferences, paper review, Research Needs Statements, and webinars. The Program Office is also responsible for developing and maintaining relationships with Core Program sponsors. Stephen Maher is the Deputy Division Director and Director for Program Content

Program Content

TAD's 177 standing committees and more than 200 subcommittees cover all modes of transportation and a wide range of disciplines including engineer, planning, law, economics, data analysis, and more. In 2022 TAD standing committees reviewed or developed program content in the following ways:

- Review of 5,000+ papers submitted for the 2023 Annual Meeting plus additional papers submitted to the TRR outside of the Annual Meeting.
- Development of 78 workshops, 327 lectern sessions, and 195 poster sessions for the 2023 Annual Meeting, involving more than 7,000 presentations.
- Paper review and speaker invitations for 9 smaller conferences.
- Approximately 50 webinars
- More than 400 committee and subcommittee meetings, which include presentation of technical content and exchange of information among members and committee friends.

Committee Restructuring

In 2022 the committee restructuring process formally came to completion with the rotation of committee memberships in April. New and consolidated committees are fully operational and producing the kind of quality results that characterize TRB standing technical committees, including Annual Meeting paper review and session planning, conferences, webinars, research needs statements, and information dissemination.

Committee Processes

Re-engineering the committees does not stop with the formal restructuring. An ongoing effort involves evaluating and improving committee processes and guidance to improve efficiency, consistency, and effectiveness. Completed products include the following:

- A new Research Needs Statement database (the old one was deemed to pose IT security risks) with written and video recorded usage instructions.
- Improvements to committee chair tools in MyTRB to facilitate committee activities and communication with other volunteers without causing IT security concerns
- A "quick guide" for co-sponsoring conferences with other organizations.
- A "quick guide" for running effective meetings, including virtual meetings.

Committees are required to produce/update a Triennial Strategic Plan (TSP). The consistency of this activity has been uneven. An effort is ongoing to create a more efficient process using a consistent template and easier to use IT tools. The objective of streamlining the process is to allow the committees to focus on the most important elements of the TSP: the committee outlook and three-year plan.

Field/State Visits & State DOT TRB Representatives

One element of TRB's Core Program is to conduct period "field visits" to state departments of transportation and other transportation and research organizations. This field visit program had been conducted by staff of the Technical Activities division for more than 75 years when COVID caused non-essential travel to be deemed unadvisable. As a result, we have been conducting "virtual state visits" for two years. In 2022, the virtual visits were carried out on four days in October and November. TRB State Representatives were polled about issues of most interest to their states and the virtual visits were structured around these issues, including both updates on what TRB is doing in the areas of interest and presentations from 24 states on their efforts in the same areas. Currently, we are developing potential options for combining both in-person and virtual "visits" to take advantage of the benefits of each format.

Publications and Outreach

The Publications Office in TAD is responsible for TRB's peer-reviewed journal, the Transportation Research Record*, and for other TAD publications. This office manages the peer review process for Annual Meeting papers. It also promotes communication with paper authors and their institutions and with TAD volunteers to strengthen the work of the volunteers, disseminate research findings, and otherwise promote the work of TAD's committees. Patti Lockhart is the Director for Publishing and Outreach*

Transportation Research Record (TRR) Journal

During 2022, the *TRR* reached a journal citation impact factor of 2.019, a quadrupling of the impact factor in five years. In addition, the TRR ranks within the top five transportation journals for citations in news sources, policy documents, and patents, demonstrating the usefulness of interest of the journal's content to citizens and its usefulness to decision makers and inventors. These indicators of the value of TRR articles are making the journal more attractive to the best authors in a process that should begin to form a "virtuous cycle" of improvement. However, it

should be noted that such improve also attracts competition in what can be a very competitive world of peer reviewed journals. TAD continues to look for ways to attract and retain the best material.

Also during 2002, *TRR* staff held four outreach sessions with Group and Section chairs to explore ways to improve the review process and identify experts to serve on the Editorial Board, which is underwent its first membership rotation since it was established three years ago. The process of outreach and improvement will continue into the 2023 Annual Meeting where several meetings will take place with the Editorial Board and the TAD Publications Advisory Board; *TRR* staff will visit with individual committees; and "Q&A" sessions will be held for editors to discussion metrics and goals.

Other TAD Publications

TAD produces a few practitioner guidebooks that are used internationally. We are moving toward modernizing the formats of these documents and giving them broader exposure, in addition to updating the technical content. We have published *Landslides: Investigation and Mitigation* as a fully digitized ebook and worked with the National Academies Press (NAP) to migrate the book to their sales platform. We also have digitized the 7th Edition of the *Highway Capacity Manual* and worked with NAP to produce a print version for sale on their platform.

Meetings

The Meetings Office in TAD is responsible for all logistics for the TRB Annual Meeting and TRB's smaller conferences. Karissa Bingham is the Director for Meetings

TAD has hired a new Director of Meetings, Karissa Bingham. Karissa comes to TRB from the Association for Unmanned Vehicle Systems International (AUVSI) where, among other events, she worked on the Automated Vehicle Symposium that was jointly sponsored by TRB and AUVSI organizations.

Annual Meeting

After a successful return to an in-person Annual Meeting with a much smaller program in 2022, TAD has spent the rest of the year planning for a return to the normal size of the meeting (600-700 technical sessions rather than the 250 or so in 2022). This decision based on attendee feedback, which indicated a desire for more content, and on experience that some of the COVID-related reasons for reducing the number of sessions did not turn out to be as necessary as we had thought (venue cleaning procedures took less time, attendees self-regulated distancing well, etc.).

Unless the 2023 Annual Meeting takes place, we will not know if attendance will be higher than at the 2022 Annual Meeting. However, there are a few leading indicators: numbers of papers, exhibitors, patrons, early registrations, and associated group (non-TRB) events were all higher than for the 2022 meeting.

Other Conferences

TAD convened nine conferences in 2022. Eight of these were held in person and one (TRANSED) was fully virtual:

- Roundabouts, May 15-18, Monterey, CA
- Sustainability & Emerging Transportation Technology (SETT), May 31-June 2, Irvine
- Harbor Safety, June 13-15, Boston, MA
- Automated Road Transportation Symposium (ARTS), July 18-21, Garden Grove, CA
- Law Workshop, July 24-27, Portland, OR
- Tools of the Trade, August 29-31, Boise, ID
- Mobility, Accessibility, and Demand Response Transportation Conference (TRANSED), Sept 12-16, online
- Scenario Planning in Transportation, September 19-21, Washington, DC
- Visualization in Transportation, November 2-4, Washington, DC

Throughout COVID, the Meetings Office has gathered information on how others' events have performed to inform TRB's planning. They have developed guidance for virtual and hybrid meetings. This office was central to developing COVID policies and protocols for the 2022 Annual Meeting and for operationalizing them. Since the 2022 Annual Meeting, they have developed COVID policies for smaller conferences such as those listing above.

Operations

The Operations Office responsible for administrative and operational aspects of TAD's work. It was created to advance our strategic goal of improving the quality and efficiency of the many and complex operations that support hundreds of committees, subcommittees, sections, groups, and councils as well as the Annual Meeting, smaller conferences, committee rotation, state visits, etc. Chris Rajaratnam is the Director for Operations.

By its nature, the activities of this office are very process-oriented. A key priority is to make processes more standard and consistent to increase efficiency, allow operations staff to work across program teams, and facilitate onboarding of new staff. Examples of efforts advanced in 2022 are listed below; most necessarily involve coordination across TAD which is another key role of the Operations Office.

- Transfer of the entire year-long Annual Meeting planning process into SmartSheet to provide a single location for all due dates, processes, documentation, etc.
- Creation of a set of SmartSheet tools for managing the development of TAD's smaller conferences, providing visibility to all internal parties and a single location for all guidance documents, approval forms, etc.
- Enhancement of a staff guide for developing and managing conferences by adding more elements related to operational program staff responsibilities; this guide is also linked to SmartSheet.
- Creation of a brief committee guide for developing conferences mentioned in the Program section of this report.
- With the Communications team, development of a guide for communications related to TAD conferences.
- Arrangements for SmartSheet to provide customized training for TAD staff.

Staff in the Operations Office also work with the Meetings Office to provide logistics support for the Annual Meeting and conferences. They support the committee rotation process which involves rotation of 600-700 slots on 60 committees each year.

REPORT OF THE TRANSPORTATION RESEARCH BOARD DIVISION COMMITTEE
June through December 2022

BACKGROUND

The Transportation Research Board (TRB) Division Committee (Div-Comm) liaises between the Governing Board of the National Research Council (NRC) and TRB. The Div-Comm ensures that TRB meets the NRC's standards for objectivity and ensures that its activities are appropriate for the NRC. In addition, the Div-Comm monitors TRB's specially funded project committees and panel appointments, report review, and programs that are approved by the NRC Governing Board. The Div-Comm Chair assists the Executive Committee with special project approvals requested of the NRC Governing Board.

Members of the 2022/2023 Div-Comm are Chris Hendrickson (NAE), Chair; Nathaniel Ford, Executive Committee Chair; Julie Lorenz, State DOT Representative; and James Tien (NAE). The *ex officio* members are Susan Shaheen, Outgoing Executive Committee Chair; Shawn Wilson, Incoming Executive Committee Chair; and Carol Lewis, Special Committee on Diversity, Equity, and Inclusion Chair. Special thanks to Susan Shaheen and James Tien who are concluding their terms; thanks to Julie Lorenz for her service; welcome to Craig Philip, Academy Member Representative and Tanisha Hall, DE&I Committee Representative; and welcome to Carol Lewis who transitioning from DE&I Committee Representative to Incoming Executive Committee Chair, who are beginning their service on the Div-Comm.

OVERSIGHT ACTIVITIES

The following projects and committees were approved by the NRC Governing Board Executive Committee from June through December 2022. Yearly totals for oversight activities for 2022 and previous years are on p.3.

Committee and Panel Approvals

The Div-Comm Chair approved appointments to 3 committees and 61 panels from June 1, 2022 through December 31, 2022.

<u>Consensus and Advisory Studies (CAAS) (Division B)</u>

- Improving the Efficiency and Effectiveness of the Coast Guard in Certificate of Compliance Examination Program for Gas Carriers,
- Impacts of Alternative Compensation Methods on Truck Driver Retention and Safety Performance, and
- Transitioning Evidence-based Road Safety Research into Practice.

<u>Cooperative Research Programs (CRP) (Division D)</u>

- 26 from the Airport Cooperative Research Program (ACRP),
- 5 from the Behavioral Traffic Safety Cooperative Research Program (BTSCRP),
- 17 from the National Cooperative Highway Research Program (NCHRP), and
- 13 from the Transit Cooperative Research Program (TCRP).

Report Review
From June through December 2022, the Div-Comm oversaw reviews of 4 reports from CAAS and 76 projects from the CRPs:

Program	Research	Syntheses	Legal	Conference Summary	Totals
ACRP	8	1	3	**1**	**13**
BTSCRP	2	0	0	**0**	**2**
NCHRP	40	3	2	**0**	**45**
TCRP	5	7	2	**1**	**15**
TFRS*	1	0	0	**0**	**1**
Totals	**56**	**11**	**7**	**2**	**76**

*Task Force on Roadside Safety

In CAAS, there were 3 monitored reviews—reviews overseen by both the National Academies' Report Review Committee and the Div-Comm Chair, and 1 delegated review—a review overseen by only the Div-Comm Chair. In addition, CRP had 1 delegated review.

Monitored CAAS Reviews

- Emerging Hazards in Commercial Aviation: Report 1 - Initial Assessment of Safety Data and Analysis Processes
- Preparing for LNG by Rail Tank Car: A Readiness Review
- Advancing Understanding of Offshore Oil and Gas Systemic Risk in the U.S. Gulf of Mexico

Delegated Reviews

- Research, Development, Technology, and Deployment Efforts of FHWA (CAAS)
- Future of Aviation: Proceedings of a Workshop (CRP)

TRB Division Committee Data: 2013-2022

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CRP Projects	99	149	87	116	149	118	131	90	102	151
Policy Study Letter Reports	10	6	5	8	8	4	4	0	0	2
Full-Length Policy Study Reports	4	2	8	2	3	8	3	5	7	3
Conference Reports from Technical Activities and the CRPs	7	2	2	3	2	6	2	1	0	2
SHRP 2 Reports	17	24	3	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Meeting-in-Brief	n/a	1	1	0	0	0	0	0	0	0
Totals	**137**	**184**	**106**	**126**	**162**	**136**	**140**	**96**	**109**	**159**

CRP Panels

CRP Panels	**87**	**67**	**74**	**51**	**71**	**79**	**84**	**84**	**120**	**149**

NRC-Approved Committees

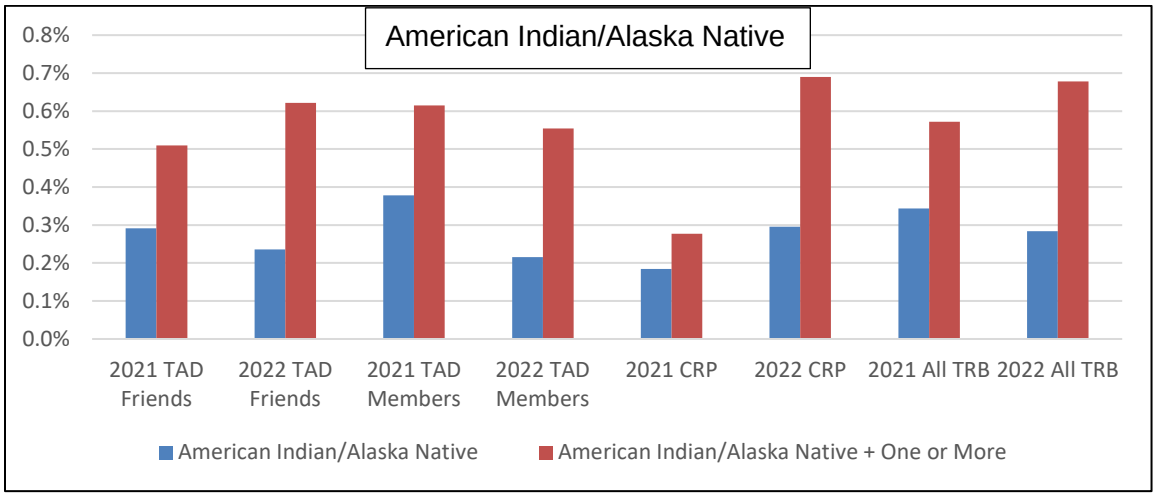
Division A (TAD)	2	4	6	0	1	1	1	3	0	0
Division B (CAAS)	6	4	4	5	8	3	4	4	4	4
Division D (CRP)	0	0	0	4	0	3	1	2	0	0
SHRP 2	0	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Totals	**8**	**9**	**10**	**5**	**9**	**4**	**6**	**9**	**4**	**4**

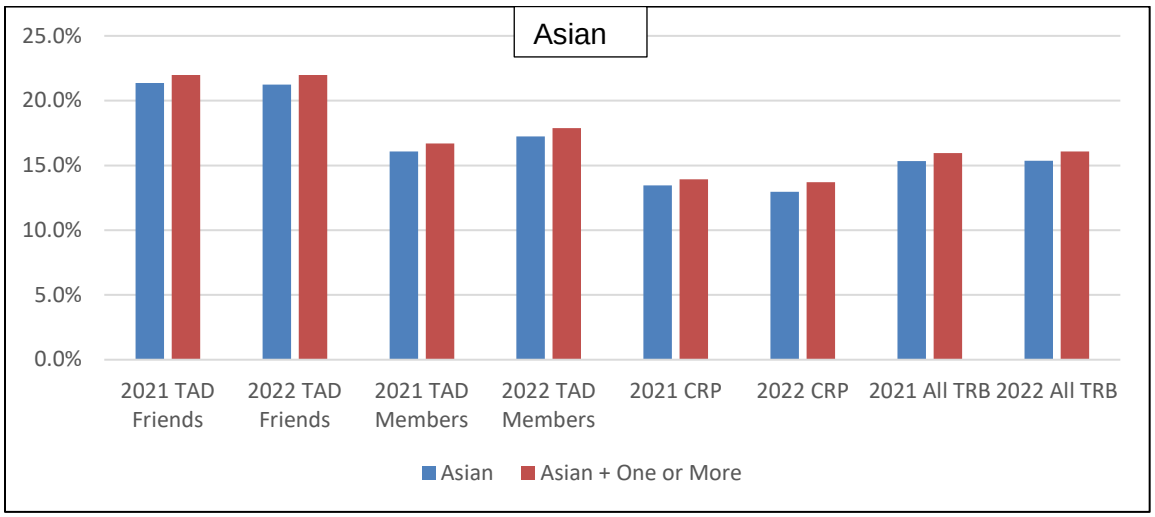
Involvement in TRB by Race/Ethnicity and Sex

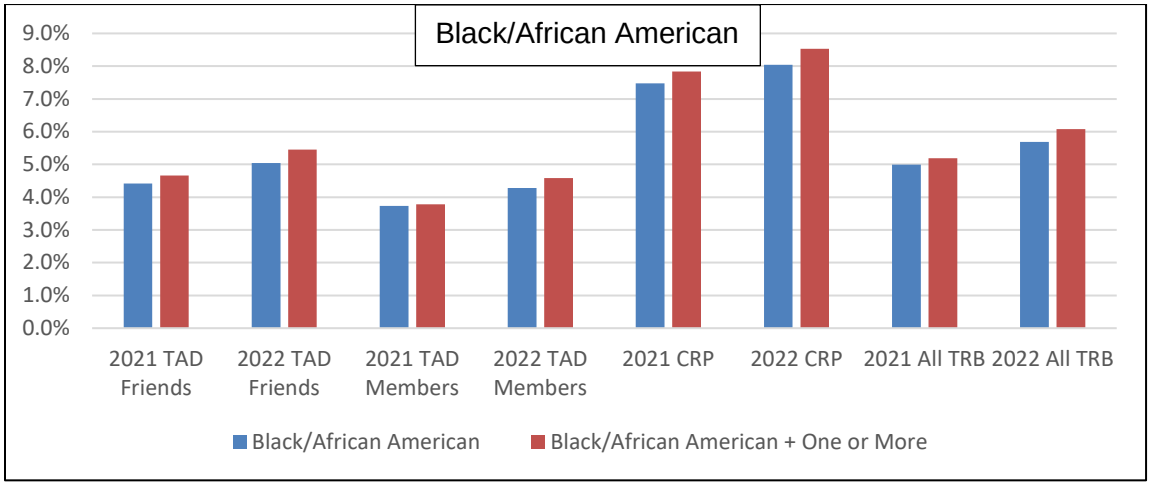
The Div-Comm monitors TRB's progress in broadening participation of minorities and women as volunteers of standing committees in the Technical Activities Division, members of CRP panels, and committee members in the Consensus and Advisory Studies (CAAS) Division. In fall 2021, the National Academies changed the categories through which volunteers report their race, ethnicity, and sex in that volunteers can select one or more category to report their demographic data. Those data are reported by (1) providing responses for each race and ethnicity category for those who responded to only that one category, and (2) by providing responses for each race and ethnicity category AND those who responded that they identify in at least one other race or ethnicity category. When reporting these responses, respondents are counted in each category to which they provide a reply—so are double-counted.

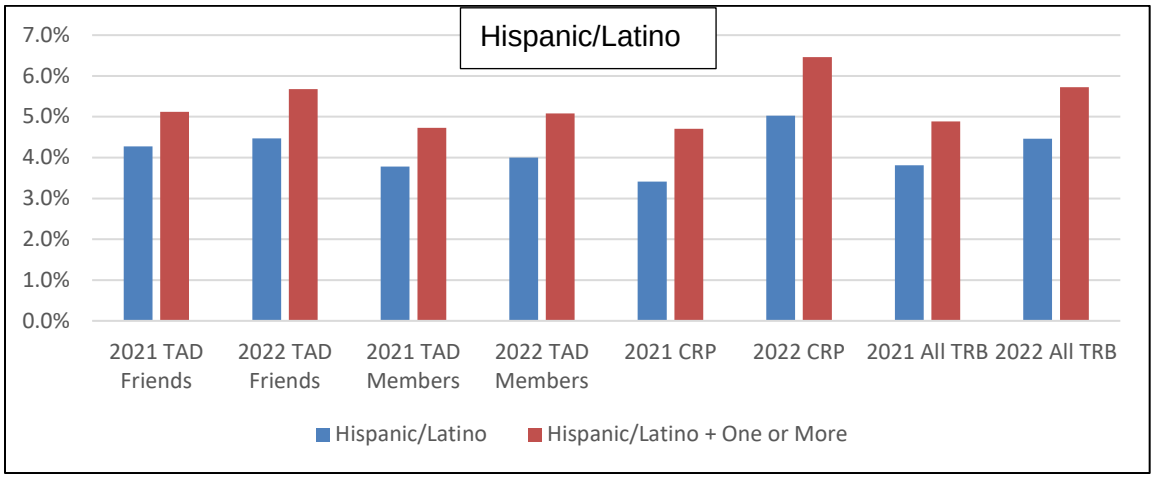
The denominator for reporting volunteers' demographic data is those who have both updated and reported their demographic information—not the total number of those who volunteers. In addition, the denominator counts individuals only once, so if someone is a volunteer on multiple panels or committees, they are counted only once. The tables below show the total number of unique volunteers and the number of those who reported their race/ethnicity, and then the composition of friends and members on TAD committees, CRP panels, and all TRB volunteers (i.e., those on CRP panels and TAD committees combined) for 2021 and 2022 broken out by six major categories for race/ethnicity. Because of data accessibility issues CAAS committees are not provided in this report. Data are then provided on participation of males and females.

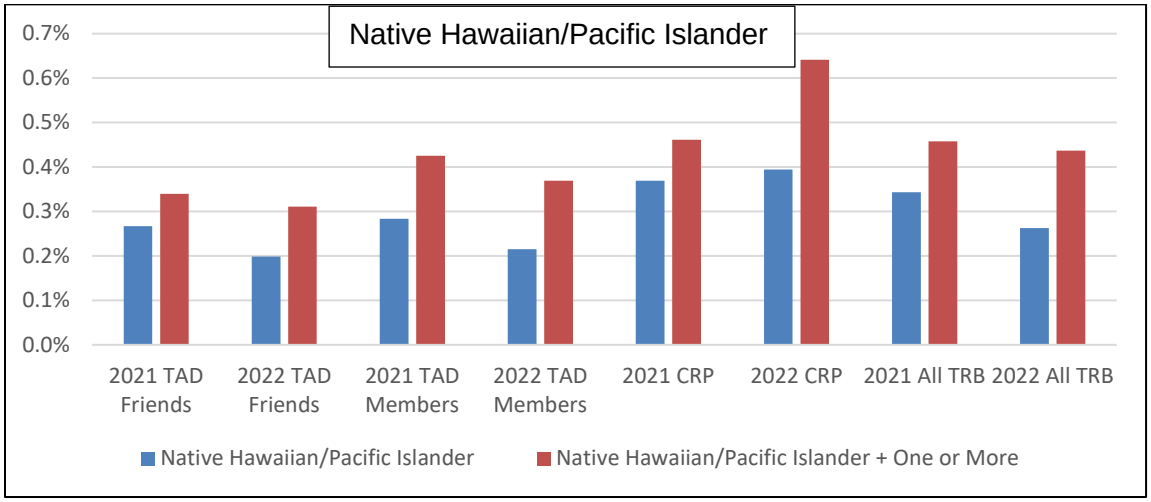
	Friends		*Members*		*CRP*		*All TRB*	
	2021	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**
Total N Unique Volunteers	17143	18991	4623	4419	3166	3425	7009	7024
Total N Providing Race/ Ethnicity	4120	8047	2114	3248	1084	2028	2621	4574

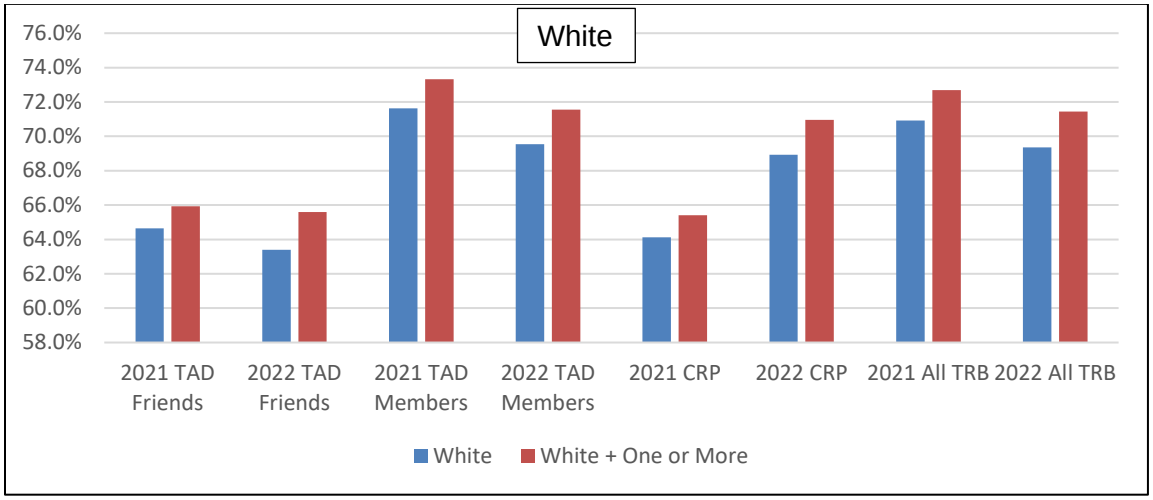

American Indian/Alaska Native
0.8%
0.7%
0.6%
0.5%
0.4%
0.3%
0.2%
0.1%
0.0%
2021 TAD Friends
2022 TAD Friends
2021 TAD Members
2022 TAD Members
2021 CRP
2022 CRP
2021 All TRB
2022 All TRB
American Indian/Alaska Native
American Indian/Alaska Native + One or More

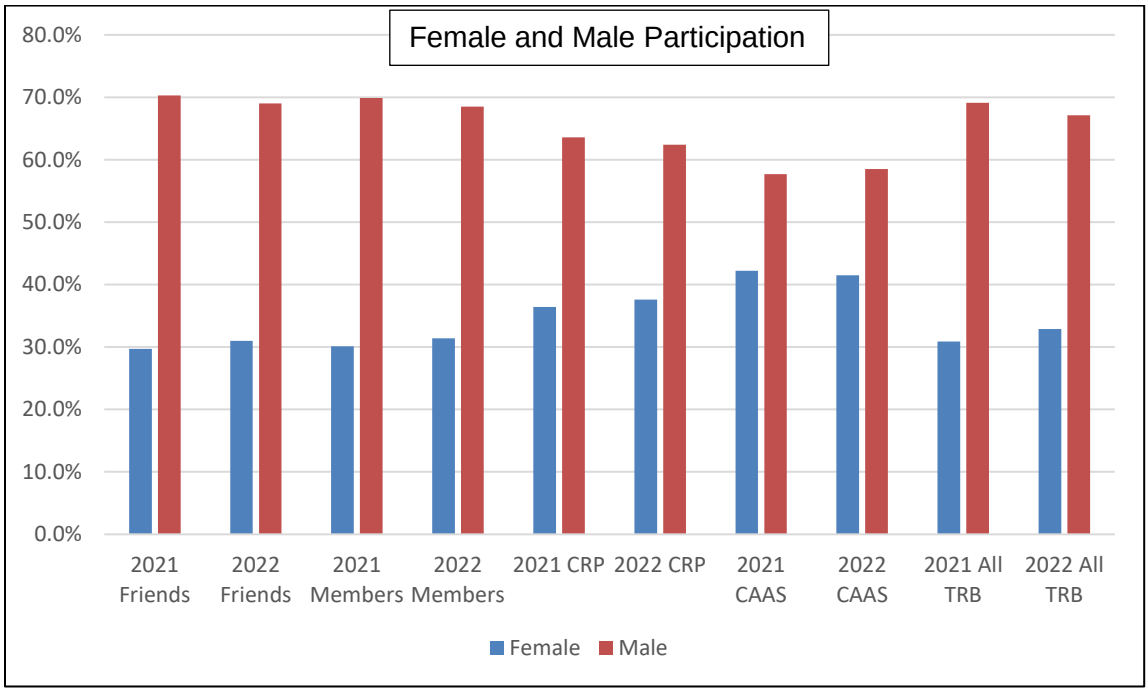

Asian
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
2021 TAD Friends
2022 TAD Friends
2021 TAD Members
2022 TAD Members
2021 CRP
2022 CRP
2021 All TRB
2022 All TRB
Asian
Asian + One or More


Black/African American
9.0%
8.0%
7.0%
6.0%
5.0%
4.0%
3.0%
2.0%
1.0%
0.0%
2021 TAD Friends
2022 TAD Friends
2021 TAD Members
2022 TAD Members
2021 CRP
2022 CRP
2021 All TRB
2022 All TRB
Black/African American
Black/African American + One or More


Hispanic/Latino
7.0%
6.0%
5.0%
4.0%
3.0%
2.0%
1.0%
0.0%
2021 TAD Friends
2022 TAD Friends
2021 TAD Members
2022 TAD Members
2021 CRP
2022 CRP
2021 All TRB
2022 All TRB
Hispanic/Latino
Hispanic/Latino + One or More


Native Hawaiian/Pacific Islander
0.7%
0.6%
0.5%
0.4%
0.3%
0.2%
0.1%
0.0%
2021 TAD Friends
2022 TAD Friends
2021 TAD Members
2022 TAD Members
2021 CRP
2022 CRP
2021 All TRB
2022 All TRB
Native Hawaiian/Pacific Islander
Native Hawaiian/Pacific Islander + One or More


White
76.0%
74.0%
72.0%
70.0%
68.0%
66.0%
64.0%
62.0%
60.0%
58.0%
2021 TAD Friends
2022 TAD Friends
2021 TAD Members
2022 TAD Members
2021 CRP
2022 CRP
2021 All TRB
2022 All TRB
White
White + One or More



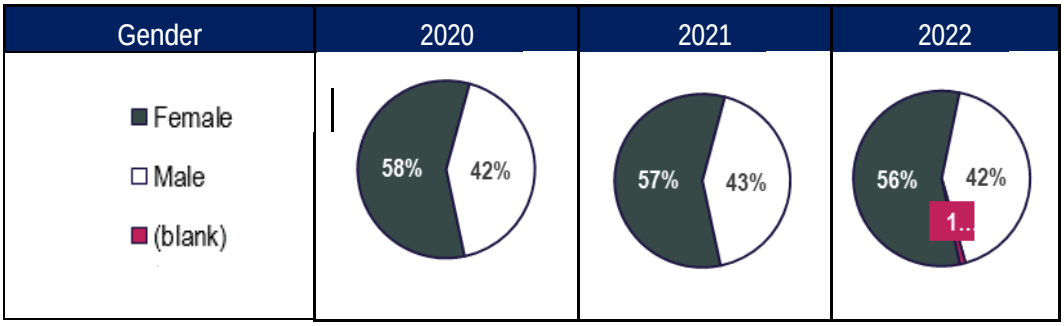
Committee Leadership

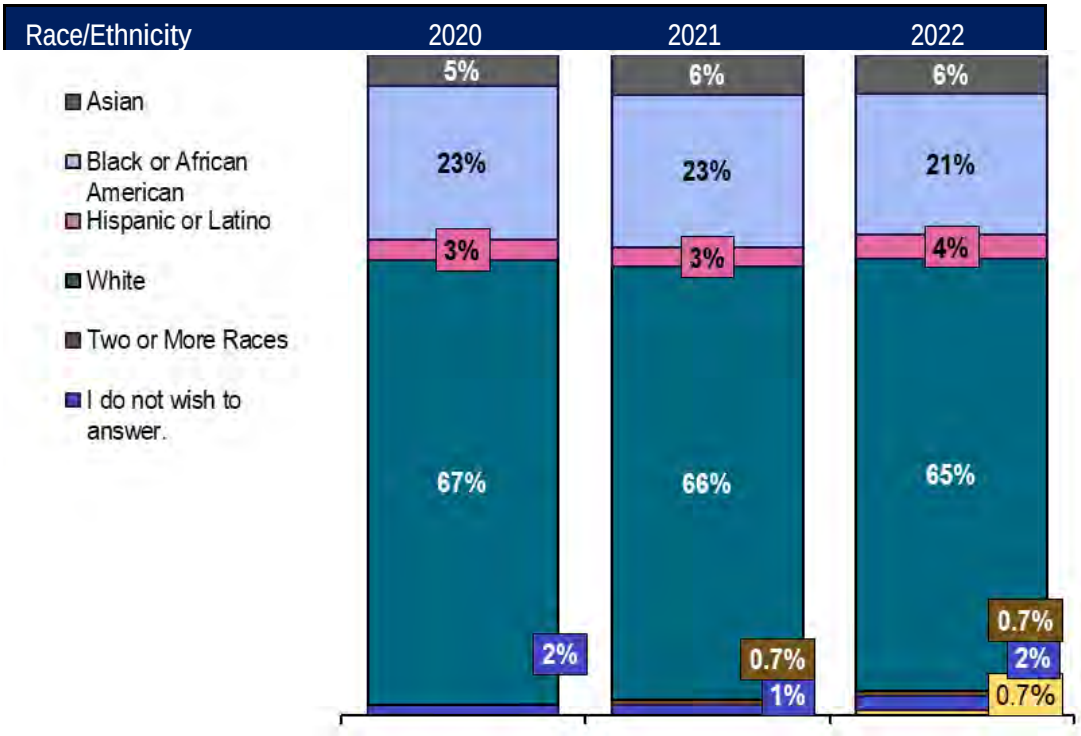
Data on committee leadership were also examined for TAD for those who are in the role of chair or co-chair for the sections, groups, councils, and standing committees.

	All Chairs	Providing Race/Ethnicity	Providing Gender	Women	All Minorities	Black/Hispanic/ Native American
2021 N	234	217	218	93	29	13
2021%		92.7%	93.2%	42.7%	13.4%	6.0%
2022 N	228	209	223	100	31	18
2022%		91.7%	97.8%	44.8%	14.8%	8.6%

TRB Staff Demographic Trends (2020-2022)

Every other year, the Div-Comm report provides demographic information about TRB staff. The graphs below compare the racial/ethnic and gender diversity of staff from 2020 to 2022. In 2020 there were 132 TRB staff, in 2021 there were 134, and as of November 2022, there were 136.





Diversity, Equity, and Inclusion (DE&I) Strategic Plan Update
Transportation Research Board

Mission
TRB's Diversity, Equity, and Inclusion (DE&I) Initiative's mission is to create and foster an inclusive environment that leads to increased diversity of participants in TRB and equitable outcomes for the transportation system.

Background
The TRB Executive Committee adopted an Inclusion and Diversity Strategic Plan in January 2018. The plan was updated to include equity in fall 2020. The TRB Special Committee on DE&I has been charged with monitoring implementation of the Plan and proposing revisions as appropriate. The Committee meets quarterly, monitors progress on the plan's strategies and action items, and reports to the TRB Division Committee and the TRB Executive Committee. The committee's membership is representative of TRB's major oversight committees and stakeholders and every effort is made to ensure racial, ethnic, gender, and ability diversity of the committee's membership.

Significant progress has been made in the strategies contained in the 2018 Plan. Since TRB began implementing its plan, the National Academies of Sciences, Engineering, and Medicine (NASEM) also developed a DE&I strategic plan and has created its Office of Diversity and Inclusion (ODI). It also stood up two employee-led groups in 2022—the NASEM DEI Council and the DEI Program Advisory Group. TRB staff have collaborated in the development and monitoring of the NASEM DE&I Strategic Plan to ensure alignment of the work of ODI and the employee groups, as well as with TRB's DE&I strategic plan.

The TRB DE&I Strategic Plan, newly updated and approved at the June 2022 Executive Committee meeting, provides a roadmap and explanation for achieving this mission. During the COVID-19 pandemic and since the calls for social justice that have become more prominent in recent years, the national dialogue around issues of diversity, equity, and inclusion has altered dramatically, and brought about changes and increased awareness of the remaining effects of past injustices and systems and practices that continue to hurt historically marginalized and vulnerable groups. This national dialogue has shifted at all levels of society—for instance, in how federal priorities in the Infrastructure Investment and Jobs Act seek to address economic disparities and years disinvestment in U.S. infrastructure that have significantly affected communities of color, workplace recruitment and retention practices, and even how we interact with our friends and neighbors who come from different backgrounds. To bring about true change, it is necessary to revisit how we make decisions and ensure that decisions take into account those from historically marginalized and vulnerable groups and any unintended consequences on those groups. This DE&I strategic plan seeks to build on efforts since implementation of TRB's original plan and ensure that issues of equity are addressed in all aspects of TRB's work.

Membership
The Special Committee chair is Dr. Carol Lewis, Texas Southern University, and the members are as follows:

- Gloria Bender, TransSolutions LLC
- Alva Carrasco, WSP
- George (Avery) Grimes, Patriot Rail Company: Chair of TAC
- Joey Goldman, Kearns & West

- Tanisha Hall, Fairpointe Planning, LLC
- Chris Hendrickson, Carnegie Mellon University: Chair of the TRB Division Committee, Member of the Executive Committee and SPPR
- Hyun-A Park, Spy Pond Partners, LLC
- Natalie Stiffler, City of Boulder

The committee welcomes Tanisha Hall who will begin her term as chair and Joey Goldman who began his service as a member in summer 2022. The committee thanks Kimberly Webb, Michigan Department of Transportation, for her three years of service to the committee. Ms. Webb retired at the end of 2022. The committee also thanks Andrew Braham, University of Arkansas, who has served on this committee for the past three years.

Working Definitions
This plan uses the following definitions for diversity, inclusion, and equity:

- Diversity is defined as the broad spectrum of experiences, cultures, and physical attributes within a community, including but not limited to race or ancestry, national origin, religion, age, ability, gender, gender identity or expression, sexual orientation, socioeconomic status, or perspective.
- Inclusion means that all individuals and groups are welcomed, valued, respected, and supported equally as they contribute to the mission and success of a community.
- Equity is the absence of barriers, biases, and obstacles that impede equal access, fair treatment, and opportunity by all members of a community.

Updates on Strategies and Associated Action Items
The following are the seven strategies and associated actions that have been accomplished or are underway in TRB:

Strategy 1
Ensure equitable opportunities for all involved in TRB and implement strategies and resources that are used to recruit, welcome, and actively involve more diverse committee and panel members.

- The Office of Diversity and Inclusion released toolkits aimed at fostering a culture of inclusion and respect among staff, volunteers, and Academy members: Pronouns, Recruiting Diverse Volunteers, Indigenous Land Acknowledgments, Inclusive Language Guide, Inclusive Meeting Scorecard, and a PowerPoint on Inclusion and Respect.
- For the second year in a row, the Technical Activities Council gave out Blue Ribbon Awards for Diversity. This year's winners are the Standing Committee on Freeway Operations and the Standing Committee on Rail Transit Infrastructure Design and Maintenance.
- Data show progress in diversifying committees and panels. Both staff and volunteer leadership continue to prioritize diversity when recruiting new members of committees and panels. In the coming years, once the new demographic categories have been in place longer, we will be able to make more conclusive statements about overall trends.

Strategy 2
Engage with transportation-related organizations and other appropriate organizations that serve groups that are underrepresented in TRB (e.g., minority groups, women, people with disabilities) to increase their members' awareness of and participation in TRB.

- Through TRB's MOUs with Latinos In Transit (LIT) and the Conference of Minority Transportation Officials (COMTO), as well as its recently signed Letter of Intent with the Airport Minority Advisory Council (AMAC), the following efforts have taken place:
  - COMTO published 4 articles about TRB's DE&I-related work and committees in its 2022 *Accelerate* magazine. In addition, COMTO distributed calls for nominations for CRP projects, and the COMTO CEO participated in the TCRP Oversight and Project Selection Committee meeting.
  - LIT helped promote TRB's Careers-in-Motion Networking Fair, LIT leaders presented an overview of their organization at the Minority Student Fellows' orientation, served as Annual Meeting mentors for two fellows, a TRB senior program officer is on LIT's Board of Directors, and TRB participated in the LIT Leadership Summit this past fall.
  - AMAC promoted TRB's new ACRP projects to help identify new panel members and participated in the Careers-in-Motion Networking Fair.
- In November, training took place for the latest cohort of transit professionals selected as TCRP Ambassadors. This program, a joint effort with APTA and COMTO, trains ambassadors to disseminate TCRP products to the public.
- In addition to TRB's MOU/Letter of Intent partners, examples of other organizations TRB works with to recruit diverse CRP panel members include a number of Historically Black Colleges and Universities, Intertribal Transportation Association, National Society of Black Engineers, Society of Women Engineers, National Rural Transit Assistance Program, and the Society of Hispanic Professional Engineers.
- Senior Program Officers from TAD and CRP gave a presentation about TRB involvement to the interns participating in the Transportation Diversity Recruitment Program at the Michigan Department of Transportation.

Strategy 3

Create opportunities for everyone to make connections and feel included, welcomed, and able to participate equitably at the Annual Meeting, specialty conferences, and committee meetings.

- The theme for this year's Annual Meeting is "Rejuvenation Out of Disruption: Envisioning a Transportation System for a Dynamic Future" and the one of the curated programs features sessions focused on equity.
- The DE&I Committee is working on a list of suggested DE&I-related actions that committees can take to increase the diversity of their committees and consider other DE&I-related actions they can take.
- The Annual Meeting's New Attendee Engagement Session, and the Young Member Coordinating Council's Three-Minute Thesis Competition, Early Academic Careers workshop, and its subcommittee meetings welcome and support topics of interest of students and young professionals.
- TRB staff continued work with FHWA Dwight David Eisenhower Transportation Fellowship Program staff to engage its 200+ fellows in the Annual Meeting and in standing committees' meetings by holding a joint career panel with the TRB Minority Student Fellows and by matching fellows with the committees most closely aligned with their professional and academic interests.
- Mentoring initiatives: TRB staff/volunteers again matched Minority Student Fellows with Annual Meeting mentors. YMC subcommittees are also establishing similar Annual Meeting mentoring initiatives.
- Continued improvements in engagement of TAD standing committee members and chairs by gender, ethnicity, international status, and young professional status. Among chairs, nearly 50% are now women.

- The Standing Committee on Native American Transportation Issues (AME30) held a graphic design and artwork competition to illustrate the impact of transportation on tribal communities. Winners will present their artwork the AME30 committee meeting and will be featured in a *TR News* feature article.

Strategy 4

Achieve greater diversity among TRB contractors and their lead staff, whether they are research consultants or suppliers.

- The CRPs continue to ask organizations submitting proposals about how their team would bring a diverse and inclusive approach to their research, and policies or programs that they have in place to promote diversity and inclusion.
- AMAC and ACRP hosted a workshop, *Expanding DBE Participation in ACRP*, that considered ways to engage minority business owners with ACRP with an emphasis on winning proposals as a prime contractor or participation as subcontractor. Networking sessions followed the event.

Strategy 5

Identify and minimize barriers to achieving greater TRB staff diversity and assure opportunities for career advancement for diverse staff.

- On December, 5, 2022, TRB welcomed Victoria Sheehan, its first female Executive Director in its 103-year history.
- The National Academies' Director of Workforce Diversity and Inclusion stood up its first employee resource group (ERG) for Black staff and their allies. An ERG is a staff-led group of people who share any dimension of diversity (race/ethnicity, sexual identity, disability, etc.).
- NASEM HR and TRB are continuing to increase diversity of staff and allow for DEI conversations by advertising NASEM job opportunities in publications that target diverse population, piloting a program for interns from underrepresented populations, and hosting dialogues with staff around DEI topics.

Strategy 6

Ensure that TRB's programmatic activities (e.g., convening and other technical activities, consensus activities, and research projects) address diversity, equity, and inclusion and ensure results are disseminated.

- The CRPs have a robust array of projects in progress that address DE&I-related topics. A sample includes the following:
  - Incorporating Environmental Justice and Equity Principles and Data into Airport Decision-Making (ACRP)
  - Strategies to Address Homelessness at Airports (ACRP)
  - Improving Public Transportation in Rural Areas and Tribal Communities (NCHRP/TCRP)
  - Reliability and Quality of Service Evaluation Methods for Rural Highways (NCHRP)
  - Research Roadmap for Institutionalizing Transportation Equity (NCHRP)
  - Tactile Wayfinding in Transportation Settings for Travelers Who Are Blind or Visually Impaired (TCRP)
- Recently published reports and projects from the CRPs and the Technical Activities Division that address DE&I-related topics include the following:
  - Attracting Retaining and Developing the 2030 Transportation Workforce: Design, Construction, and Maintenance (NCHRP)

  - Encampments of Unhoused Individuals in Transportation Rights-of-Way Laws and State DOT Practices (NCHRP)
  - Policing and Public Transportation (TCRP)
  - Racial Equity Black America and Public Transportation-Volume-1: A Review of Economic Health and Social Impacts (TCRP)
  - Advancing Transportation Equity: Conference Summary and Action Brief (TAD)
- TRB's website continues to host DE&I-related snap searches on accessibility, social equity and underserved populations, and tribal transportation. These searches include all recent reports, projects, and other resources in those areas.
- The likely policy session for the June 2023 Executive Committee policy session is on the disproportionate representation of some ethnicities in traffic fatalities, the pandemic's role in the increase in traffic fatalities, and potential way to address those causes.
- During its fall 2022 meeting, the Marine Board's focus session examined DEI-related policy and governance gaps of IIJA infrastructure funding opportunities and discretionary grant programs for seaports, intermodal facilities, and near-port areas. It identified research needs and best practices that could align funding decisions with equitable environmental and social justice policies. Presentations are available at Marine Board Fall Meeting 2022.
- TRB hosted TRANSED: Mobility, Accessibility, and Demand Response Transportation Conference in September 2022 with the theme of "Inclusive Accessible and Sustainable Demand Response Transportation."
- The Committee on Data, Metrics, and Analytic Methods for Assessing Equity Impacts of Surface Transportation Funding Programs has been meeting since December 2021 and plans to release its consensus report in 2023.
- TRB's programs that support and recognize students continue to grow and thrive: The Minority Students Fellows welcomes its 14th cohort of fellows to present their research at the Annual Meeting. Since 2008, the ACRP Graduate Award Program has provided cash awards and support to for graduate students to carry out applied research on airport and aviation system issues and attend the Annual Meeting. The ACRP University Design Competition, a national competition for university students, awards groups that present the most viable solutions to issues related to airports and the National Airspace System.
- Transportation Research Record (TRR) staff continue to maintain the following open-access collections:
  - ACRP Graduate Award Program on Public-Sector Aviation Issues: papers from the 2010-2022 cohorts of award recipients;
  - COVID-19 and Transportation: papers covering the impact of the virus on transportation; and
  - Publications by TRB Minority Student Fellows: papers from the 2010-2022 cohorts of fellows' papers accepted for TRR publication.
- TRB hosted two DE&I-related webinars: "Considering Quality of Life in Transportation Planning and Development" and "Enhancing Public Health Equity Through Transportation."
- TRB will host a three-part webinar series in February and March 2023 on attracting a diverse community of younger people to consider transportation as a career.

Strategy 7

Improve existing data, information, and communication mechanisms to support all strategies.

- TRB Communications staff worked with TAD standing committees to highlight transportation issues relative to nationally recognized months focusing on diversity issues: Hispanic Heritage Month (September 15-October 15), LGBTQ+ History Month (October),

and Native American Heritage Month (November). Also, in July they recognized the 31st anniversary of the Americans with Disabilities Act.

- *TR News* continues its regular DEI column to highlight DEI initiatives and leaders both in TRB and around NASEM.
- TRB's representative on the NASEM DEI Council participated in a NASEM-wide panel called "Beyond Representation: Communicating through a DEI Lens."
- The Standing Committee on Accessible Transportation and Mobility and the Standing Committee on Rural, Intercity Bus, and Specialized Transportation are working on a *TR News* theme issue that will discuss how transportation is responding to the needs of those with disabilities and will take stock of barriers to accessible transportation as well as advances since passage of the American with Disabilities Act.
- TRB blogs, reports, and activities are regularly featured on the DEI Homepage of the National Academies.
- TRB's Communications Department has released or updated the following articles on its blog (on TRB's webpage):
  - Building Socioeconomic Equity through Transportation Research
  - TRB Offers a Running Start to Transportation's Next Generation
  - Making Travel More Equitable for People with Disabilities

Update on TRB Minority Student Fellows Program

The TRB Minority Student Fellows Program, now in its fourteenth year, promotes minority participation in transportation and TRB. This year, the program welcomes 20 students from 15 institutions. The program supports students from historically black colleges and universities, Hispanic-serving institutions, American Indian/Alaska Native-serving institutions to present their research at the TRB Annual Meeting, and a Native Hawaiian-Serving Institution. Each institution designates a faculty mentor to oversee each student's research. Fellows will again be presenting their research together in their own poster session, session 3097, on Tuesday, January 10th from 10:15 AM - 12 PM in the Washington Convention Center, Hall A. More information about their presentations are provided below.

The participating institutions this year are Arizona State University; California State Polytechnic University, California State University—Long Beach; Pomona; City College of New York; Florida A&M University; Florida International University; Morgan State University; North Central Carolina University; Northern Arizona University; Tennessee State University; Texas Southern University; University of Arizona; University of Hawai'i, Mānoa; University of New Mexico; and University of Texas at El Paso.

This year's cohort of 20 students represent a variety of transportation disciplines and include both undergraduate and graduate students. Students come from not only civil engineering and planning, but also from construction engineering, mechanical engineering, electronic engineering technology, computer science, biochemistry, geospatial science, and global national security. In addition, three students from the 2022 cohort were awarded Alumni Scholarships to attend the 2023 Annual Meeting and participate in activities with those from the 2023 cohort.

The largest source of program funding for the students has come from FHWA's Dwight David Eisenhower Transportation Fellowship Program. Other key sources of funding are from organizations that have earmarked money for students at particular schools: Advancing Sustainability through Powered Infrastructure for Roadway Electrification at the University of Texas at El Paso; Arizona Department of Transportation; Cambridge Systematics; Michigan Department of Transportation; North Carolina Department of Transportation; North Central Texas Council of Governments; and Tennessee Department of Transportation. The final source of funding is individual contributions—some made throughout the year but most from individual registrants to the Annual Meeting who donate when registered. Executive Committee members have contributed to the program this way, and their donations are greatly appreciated. Executive committee members are all cordially invited to the Fellows Welcome Reception which will take place in the East Overlook of the Washington Convention Center on Sunday, January 8th from 4:30 PM - 6 PM.

The fellows' first activity was an orientation in November when they went over their schedule, travel logistics, and learned about TRB and the Annual Meeting format. In January, the special events planned for them include participation in the Careers in Motion Networking Fair and an orientation on Sunday, the Welcome Reception on Sunday afternoon, a federal government career panel with FHWA/DOE/EPA staff, and a networking luncheon. Fellows will also be attending a variety of Annual Meeting events including the New Attendee Welcome Session, standing committee meetings, the Chair's Plenary Session, and Dwight David Eisenhower Transportation Fellowship Program presentations, among other events.

Details about the 20 students and their research presentations are as follows:

Nicole Anderson is a Ph.D. student at Morgan State University studying civil engineering with a focus on transportation. Her paper is titled “Identifying Safest Complete Street Design: A Driving Simulator.” Nicole’s faculty mentor is Mansoureh Jeihani. (Poster A231)

Jeremiah Bailey is a master’s student at Texas Southern University studying urban planning with a focus on transportation. His paper is titled “Telework After the Pandemic: A Path to Permanence.” Jeremiah’s faculty mentor is Gwendolyn Goodwin. (Poster A262)

Elijah Bond-Hawkins is a senior at Florida Agricultural and Mechanical University studying electronic engineering technology with a focus on mechatronics and robotics. His paper is titled “The Smart Parking Lot: Proof of Concept with Prototype Design.” Elijah’s faculty mentor is Chao Li. (Poster A272)

Quinton Butler is a master’s student at North Carolina Central University studying environmental, earth, and geospatial sciences. His paper is titled “The Administration and Mapping of UAS Use by the North Carolina Department of Transportation.” Quinton’s faculty mentor is Tim Mulrooney. (Poster A233)

Alonso Carrillo is a master’s student at the University of Arizona pursuing a degree in urban planning and real estate development with a focus on transit-oriented development. His paper is titled “Affordable Housing Provision and Transit-Oriented Development.” Alonso’s faculty mentor is Arlie Adkins. (Poster A250)

David Castano is a junior at City College of New York studying civil engineering with a focus on transportation. His paper is titled “Commuting from Vulnerable Neighborhoods in the Five Boroughs of New York City.” David’s faculty mentor is Alison Conway. (Poster A253)

Gabriella Cerna is a junior at Arizona State University studying biochemistry and microbiology. Her paper is titled “Reducing Asphalt Emission Using Earth-Abundant Metal Salts.” Gabriella’s faculty mentor is Laura Ackerman. (Poster A263)

Edward Clay is a master’s student at California State Polytechnic University, Pomona studying transportation engineering. His paper is titled “Understanding Older Adults’ Mobility in Older Adult Communities.” Edward’s faculty mentors are Wen Cheng and Yongping Zhang. (Poster A252)

Diana Cortes is a senior at Tennessee State University studying civil engineering. Her paper is titled “Machine Learning and Regression Based Modeling of Pedestrian Crash Injury Severity Prediction: A Comparative Study.” Diana’s faculty mentor is Deo Chimba. (Poster A251)

Hector Cruz is a Ph.D. student at the University of Texas at El Paso studying civil engineering with a focus on pavement materials. His paper is titled “Impact of Wireless Power Transfer System Inclusion in Flexible Pavements.” Hector’s faculty mentor is Soheil Nazarian. (Poster A281)

Rueben Esteves is a senior at the University of Hawai’i at Mānoa studying civil engineering with a focus on traffic simulations and operations. His paper is titled “Simulation-based Investigations on Stop Sign-Controlled Alternative Intersection Design and Operations.” Rueben’s faculty mentor is Guohui Zhang. (Poster A280)

Anthony Forcades is a senior at Florida International University studying civil engineering with a focus on transportation planning. His paper is titled “Exploring Work Zone Crash Risk for Different Highway Functional Classifications.” Anthony’s faculty mentor is Priyanka Alluri. (Poster A283)

Armando Martinez is a senior at Northern Arizona University studying computer science with a focus on active transportation planning and data science. His paper is titled “Exploring Neighborhood Differences in Bicycling Accessibility to Physical and Virtual Workplaces.” Armando’s faculty mentor is Steven Gehrke. (Poster A282)

Sebastian Morales is a senior at the University of Texas, El Paso studying civil engineering with an emphasis on pavements, foundations, and transportation. His paper is titled “Impact of Fines on Various Base Material Properties.” Sebastian’s faculty mentor is Soheil Nazarian. (Poster A242)

Eric Olaguir is a junior at the University of New Mexico studying mechanical engineering with a focus on structure durability. His paper is titled “Unmanned Robotic Ground Vehicles Operated Using Augmented Reality (AR): Lessons Learned from Field Implementation.” Eric’s faculty mentor is Fernando Moreu. (Poster A241)

Leonor Reyes is a senior at Florida International University studying civil engineering with a focus on transportation. Her paper is titled “Investigating Factors that Influence The Spatiotemporal Gaps Between Primary Incidents and Secondary Crashes.” Leanor’s faculty mentor is Priyanka Alluri. (Poster A293)

Ossiris Rodriguez is a senior at the University of New Mexico pursuing a bachelor’s degree in civil engineering with a focus on transportation planning. His paper is titled “Longitudinal Spatial Trends in U.S. Pedestrian Fatalities, 1999-2020.” Ossiris’s faculty mentor is Nick Ferenchak. (Poster A243)

Evan Taylor is a Ph.D. student at Morgan State University studying transportation and urban infrastructure systems with a focus on transportation equity and transportation systems. His paper is titled “Analyzing Changes in Vehicular, Bicycle and Pedestrian Traffic Around Baltimore City Parks During COVID-19.” Evan’s faculty mentors are Celeste Chavis and Mansoureh Jeihani. (Poster A232)

Timothy Thiergart is a junior at the University of New Mexico studying global national security with a focus on military studies. His paper is titled “Smart Sensing LEWIS technology and its Aid in Flood Data Analysis for Ohkay Owingeh.” Timothy’s faculty mentor is Fernando Moreu. (Poster A240)

Jose Torres-Aguilera is a senior at California State University, Long Beach studying civil engineering with a focus on transportation. His paper is titled “Transit and Food Security in America.” Jose’s faculty mentor is Shailesh Chandra. (Poster A273)

The three students from the 2022 cohort who were awarded TRB Minority Student Fellow Alumni Scholarships are as follows:

Esther Bia just graduated with a bachelor’s degree in civil engineering from the University of New Mexico. She has been working as a junior engineer intern at Parametrix, a transportation engineering and planning firm. Esther plans to continue work in the transportation industry.

Dunsin Fadojutimi graduated in spring 2022 with a bachelor's degree in electrical engineering from Morgan State University in Baltimore, Maryland. She is currently working for Honeywell Aerospace in Florida.

Jesus Molina graduated in summer 2022 with a bachelor's degree in civil engineering from Florida International University. His long-term career goal is to start a company that develops autonomous visual bridge inspection systems.

Young Members Coordinating Council Report, January 2023

In its thirteenth year, the Young Members Coordinating Council (YMCC) has continued to develop and promote opportunities for involvement, resources, connections, and representation in all levels of TRB. Evolution of YMCC continues following the Technical Activities Division's Strategic Alignment effort and as the field of transportation continues to advance.

Organization

YMCC is one of four Coordinating Councils and continues to have representation from most TAC Groups, although, the level of participation varies. Several have robust programs, organizing activities Annual Meeting events, some are waning in their level of activity, and other newly established Group level subcommittees are building momentum with various initiatives. Other new Group subcommittees are still under consideration.

Eleftheria (Ria) Kontou effectively assumed the YMCC Chair position April 15, 2021. Under Dr. Kontou's leadership, YMCC continues to hold periodic meetings and to promote and maintain young professional involvement at an effective level of young member activity including:

- Documenting key points for YMCC and its Subcommittees to provide input to Group and Section leadership, as well as TAC and the Executive Committee
- Mentoring Programs organized at the Group Subcommittee level
- Exploring strategies and platforms to help foster effective communication with young members and friends

The YMCC Chair continues to serve as an active member of TAC and ex officio member of the Executive Committee. This action has helped establish young member representation at all levels and spheres of TRB, offering the opportunity to share young member input and to communicate directly back to young members with relevant information.

2023 Annual Meeting Activities

As the TRB Annual Meeting is underway, session and workshop allocations remain limited. Young members continue to be actively engaged in several program elements, including:

- Meetings of Young Members Coordinating Council and the following Group-level Young Member Subcommittees: Aviation, Freight Systems/Marine, Policy and Organization, Public Transportation, Safety and Operations, Sustainability and Resilience, Transportation Infrastructure
- YMCC organized the workshop, *Early Academic Successful Careers: Resources and Advice*.
- YMCC is engaged in the Careers in Motion Networking Fair and the New Attendee Engagement Session
- Young Member Subcommittees are exploring opportunities to engage with their respective Groups to engage in session planning.
- Group-level Young Member Subcommittees lead or are involved in at least 13 technical sessions.
- The YMCC Chair will participate in meetings of TAC and the Executive Committee.

Other Activity

YMCC is actively engaged in discussions and planning with other Coordinating Councils and Standing Committees to explore areas for collaboration and engagement of young professionals' perspectives.

A number of Young Member Subcommittees continue to have active mentorship programs. These programs match young members with experienced professionals for annual meeting and/or career advice and guidance. Other Subcommittees are considering similar initiatives within their respective Groups.

Executive Committee (E0004)
Subcommittee on International Activities
Chair, Randy Iwasaki, AWS

Report

January 2023

Background

TRB streamlined and standardized its international activities in 2017, and established a subcommittee to the Executive Committee, which was charged with advising the Executive Director on TRB's international activities, reviewing partnership agreements with key international organizations, encouraging increased international elements of some cooperative research projects with an interest to increase cross-border collaboration, and proposing a five-year strategic plan for TRB international activities. A goal is to monitor how well TRB's efforts complement and support the international interests and activities of all its sponsors and of its parent organization, the National Academies of Sciences, Engineering, and Medicine—and whether those ties can be strengthened. The subcommittee has been taking steps to determine how TRB can measure the impact of its international activities through the level of engagement efforts, adoption of practice, and learning from committees and reports, as well as provide guidance for the direction of future international activities that TRB may undertake. In January 2018, the Executive Committee approved the vision, mission, goals, and objectives for a 5-year strategy of TRB's international activities. In June 2018, Dr. Mary Brooks, a former chair of the subcommittee, in collaboration with TRB staff, briefed the SPPR on indicative data that may measure effectiveness of TRB's program within international communities. In 2022 the Strategic Plan was revised to meet the future direction of TRB's international activities, with a focus on multilateral engagement and collaborative international transportation research.

UPDATE OF TRB INTERNATIONAL ACTIVITIES IN 2022

Technical Activities Division:

- TRB organized six conferences that included international participation and co-sponsored 14 conferences that were hosted by partner organizations.
- TRB held 67 webinars last year. Additionally, TRB jointly organized and cosponsored six webinars of the Climate Change Challenges Webinar Series with the China Highway and Transportation Society (CHTS).
- Organized and convened a 2023 TRB Annual Meeting workshop entitled *The Future of Transportation and the Role of International Research Collaboration.* The workshop is an extended session that was held at the 2022 TRA. Both events are a first step to reinitiating the European Union – United States Transportation Research Symposium as an event for in-person and virtual participation options.
- International Coordination Council (A0020C) activities include –
    - Co-Chairs, Christos Xenophontos, RI DOT, and Caroline Almeras, ECTRI, were invited to serve a second term as co-chairs.

  - Adding six new members representing AT045, AV040, AKT50, ACH30, AME20, AME50, AJE10, and AME40. The ICC now includes representatives from 31 technical activities committees as members of the coordinating council.
  - Increasing engagement to include 17 liaisons who work for 6 US, 2 European, 2 Asian, 1 South American, and 7 worldwide organizations with a mission supporting international collaboration in transportation research and practice.
  - Growing the Friends list to roughly 600 people.
  - Drafting an Action Plan to implement their Strategic Plan which was approved during the 2022 TRB Annual Meeting.
  - Delegating tasks to and establishing three working groups:
    - Working Group 1: Collaborating with Technical Committees led by Carol Schweiger, Schweiger Consulting and Matthew Daus, Windels Marx Lane & Mittendorf
    - Working Group 2: Engaging International Experts led by Petra Mollet, APTA and Carlo Borghini, Europe's Rail JU
    - Working Group 3: Convening Activities led by Susanna Zammataro, IRF in Geneva and Evangelos Bekiaris, CERTH-HIT
  - Keeping regular updates on ISS activities on dedicated LinkedIn Group
  - Receiving seven proposals for 2023 TRB Annual Meeting workshops
  - 2023 Annual Meeting events organized by ICC include:
    - *ICC Meeting* on January 9, 8:00 a.m. – Noon, Independence E (M4)
    - *Decarbonizing Transport Now and Everywhere: A Global Research Perspective, Part 1 (Part 2, Session 1062* Workshop to include PIARC, IRF in Geneva, USDOT, European Commission, ECTRI, WCTRS, and more; January 8, 9:00 a.m. – Noon. Part 2 will be held in the afternoon on the same day and was organized by TRB's Committee on Transportation in Developing Countries in collaboration with the World Bank and International Transport Forum.
    - *The Future of Transportation and the Role of International Research Collaboration* Workshop on Thursday, January 12, 9:00 a.m. - Noon
- Co-Sponsored the CHTS Climate Change Challenge Webinar Series
  - International Coordination Council was the lead co-sponsoring TAD entity
  - Webinar 1 (June): *Building the Future of Sustainable Transportation: Call for Emerging Technologies and Innovative Policies for Diverse Solutions* – speakers from TRB included Neil Pedersen, Dan Sperling, Karl Simon, and Christos Xenophontos
  - Webinar 2 (July): Resilience of Urban Transportation Systems – planning was supported by AMR00 as well as IRF in Geneva and ECTRI
  - Virtual Special Session of CCC (August -): *China-US Green Transport Innovation and Cooperation Forum* – planning was supported by the TRB Executive Committee and ICC
  - Webinar 3 (September): *Decarbonization of Transportation Systems* – planning was supported by Executive Committee, AM000, AMS00, and ICC as well as IRF in Geneva and ECTRI
  - Webinar 4 (November): *Intelligent Transportation Systems & IoT* – planning was supported by AMS10 and AEP80 as well as ERTICO, COTA, ITF, and ECTRI

- Webinar 5 (December): *Data-Driven Economy and Safety Evaluation for Battery Electric Vehicles* - planning was supported by AMS30 and AMS40 as well as members of AASHTOs Sustainability Working Group.

Executive Office MOU and Letters of Intent:

- China Highway and Transportation Society (CHTS)
  - As mentioned above, TRB and CHTS jointly organized six webinars of the Climate Change Challenges Webinar Series.
  - CHTS Proposes another joint webinar series on the topic of *Smart Cities and Advanced ITS*
- Chinese Overseas Transport Association (COTA)
  - Propose a joint session to be held during the XXII Pan-American Conference on Transportation and Logistic Research
  - Participated in the CHTS-TRB CCC Webinar Series in 2022
  - Convening its Winter Seminar during the TRB Annual Meeting on Sunday, January 8, 2023 and invited TRB members and staff to participate in the agenda
- European Conference of Transport Research Institutes (ECTRI)
  - Supported the organization of the ITF Pre-Summit Research Day on *Transport for Inclusive Societies*, held May 17, 2022, in Leipzig, Germany.
  - ECTRI and TRB held a joint Call for Papers on the theme of the ITF Pre-Summit Research Day, *Transport for Inclusive Societies.* Accepted papers would be published in either Special Collections of TRB's TRR or ECTRI's ETRR.
  - TRB's Young Members and International Coordinating Councils are co-sponsoring the ECTRI Young Researcher Seminar 2023 which will take place in Lisbon, Portugal May 2023.
- International Road Federation in Geneva (IRF in Geneva)
  - Participated in the CHTS-TRB CCC Webinar Series in 2022
  - Participated in session TRB organized for the Ghana Infrastructure Conference 2022
- International Transport Forum (ITF)
  - ECTRI European Commission, TRB, ITF, and WCTRS supported the organization of the ITF Research Day Workshop, *Transport for Inclusive Societies*, held May 17, 2022, in Leipzig, Germany. TRB managed the submission and review process of the call for abstracts
  - Neil Pedersen spoke during and moderated ITF Annual Summit sessions
  - ECTRI and TRB are publishing independent Special Collections of TRR and ETRR correlated with the Research Day Workshop theme
  - ITF provided presentations in sessions and workshops in the 2022 TRB Annual Meeting
  - ITF is planning sessions and workshops through TRB's Safety and Developing Countries committees for the 2023 TRB Annual Meeting
  - ITF promoted and participated in the TRB TRANSED & DRT Virtual Conference in September 2022
- Pan-American Society of Transport Research (PANAMSTR)
  - PANAMSTR promoted and participated in the TRB TRANSED & DRT Virtual Conference in September 2022

    - TRB proposed to co-sponsor the XXII Pan-American Conference on Transportation and Logistic Research, Aug. 2-4, 2023
- The World Bank
    - The World Bank promoted and participated in the TRB TRANSED & DRT Virtual Conference in September 2022
    - The World Bank and ITF are working with the TRB Committee on Transportation in Developing Countries to organize the 2023 TRB Annual Meeting Workshop, *Decarbonizing Transport Now and Everywhere: A Global Research Perspective, Part 2*
    - The World Bank has a staff person participating on the planning committee of the Transportation Resilience 2023 Conference
    - TRB proposed to co-sponsor the Transforming Transportation 2022 Conference
- World Conference on Transport Research Society (WCTRS)
    - Participated in the planning of the ITF Pre-Summit Research Day Workshop
    - Participating in the TRB Annual Meeting events organized by the International Coordinating Council
- World Road Association (PIARC)
    - FHWA maintain a list of 35 U.S. Representative who are members of PIARC Technical Committee; additionally, TRB maintains a list PIARC Technical Committee leadership members who are also TRB committee members, inclusive of other nationalities. Between the two lists there are 46 individuals.
    - Verified with TRID Librarians and PIARC staff that PIARC reports are in TRID database
    - TRB, FHWA, AASHTO, and ECTRI convened two Foresight Sessions during the PIARC Winter Service and Road Resilience Conference, February 2022. Themes were -
        - *Managed Retreat*
        - *Resilience Frameworks and Metrics*
    - TRB, FHWA, AASHTRO, and ECTRI partnered and proposed three Foresight Session to be convened at the World Road Congress 2023, Prague, Czech Republic. Theme accepted include -
        - *Perspectives on the logistics sector in the 2030s*
        - *Electric vehicles and charging infrastructure*
        - *Equity*
    - Hilary Nixon, Chair of TRB's Committee on Women and Gender in Transportation (AME20) participated in a PIARC webinar on gender equity
    - TRB and PIARC held a joint asset management committee meeting during the 11th International Conference on Managing Pavement Assets (ICMPA), June 2022
    - Neil Pedersen participated in three PIARC Advisory Group Meetings to share TRB perspectives on specific subjects. Victoria Sheehan represented TRB in the December PIARC Advisory Group Meeting, which addressed Decarbonization.
    - TRB's David Ballard, Chair of the TRB Subcommittee on Transportation History, contributed an article on TRB's history in the PIARC's Route/Roads Magazine

Cooperative Research Program Division:

- Working with international organizations to include twinning and collaboration on select CRP project panels, such as Rijkwaterstaat in The Netherlands.

2023 TRB Annual Meeting International Events:

Thank you to all the volunteers for pulling together a great set of international sessions for TRB AM 2023. Here are some of the annual meeting events. Not included are many of the affiliated events hosted by our international partners.

- ***Micromobility, Bicycles, and the Future of Cities (Workshop 1002)***, Sunday, January 8th, 2023, from 9:00 AM - 12:00 PM ET at Convention Center, 103B.
- ***Emerging Technology Research Implementation in the United States and China (Workshop 1014)***, January 8th, 2023 from 9:00 AM - 12:00 ET at Convention Center, 151B
- ***The Future of Supply Chains: What Do Its Pressures Mean for Transportation Users and Providers? (Workshop 1016)***, Sunday, January 8th, 2023, from 9:00 AM - 12:00 PM ET at Convention Center, 152A.
- ***Extreme Event Impacts: Flooded Roadways (Workshop 1021)***, Sunday, January 8th, 2023, from 9:00 AM - 12:00 PM ET at Convention Center, 102A.
- ***International Perspectives on Strategies to Reduce Track-Caused Derailments, Part 1 (Workshop 1035)***, Sunday, January 8th, 2023, from 9:00 AM - 12:00 PM ET at Convention Center, 147B.
- ***From Disruption to Opportunity: Helping Agencies Sustain Adaptations to Change (Workshop 1047)***, Sunday, January 8th, 2023, from 1:30 PM - 4:30 PM ET at Convention Center, 152A.
- ***Resilience, Robustness, Safety, and Security of Bridges and Other Transportation Structures: National and International Perspectives and Collaborations (Workshop 1061)***, Sunday, January 8th, 2023, from 1:30 PM - 4:30 PM ET at Convention Center, 209AB.
- ***Steering the Titanic: Decarbonizing Transportation Within Systems of Incremental Change (Workshop 1064)***, Sunday, January 8th, 2023, from 1:30 PM - 4:30 PM ET at Convention Center, 146A.
- ***International Perspectives on Strategies to Reduce Track-Caused Derailments, Part 2 (Workshop 1069)***, Sunday, January 9th, 2022, from 1:30 PM - 4:30 PM ET at Convention Center, 147B.
- ***Analysis of International Road Safety Data (Lectern Session 2168)***, Monday, January 9th, 2023, from 3:45 PM- 5:30 PM ET at Convention Center, 103B.
- ***One Pizza Teams: How to Find Employees and Keep Them (Lectern Session 3067)***, Tuesday, January 10th, 2023, from 10:15 AM- 12:00 PM ET at Convention Center, 151A.

2023 International Conferences (subject to change)

- International Seminar Bridges Inspection and Rehabilitation Techniques, February 22-24, Tunsia
- Transforming Transportation 2022 Conference, March 14-15, Washington, DC
- 2nd International Traffic Safety Conference, March 21-23, Doha, Qatar
- International Coordinating Council Mid-Year Meeting, June XX, Vienna, Austria; 4th International Symposium on Innovation Advances Towards the Future of Managing Traffic hosted by AustriaTech and co-sponsored by TRB
- Young Research Seminar, May 15-17, Lisbon, Portugal

- ITF Annual Summit, May 24-26, Leipzig, Germany
- 23rd COTA International Conference of Transportation Professional, July 14-17, Beijing, China
- 16th WCTRS Triennial World Conference, July 17-21, Montreal, Canada
- TRB International Conference on Low-Volume Roads, July 23-26, Cedar Rapids, Iowa
- XXVII World Road Congress, October 2-6, Prague, Czech Republic
- Transportation Resilience 2023: International Conference on Extreme Weather and Climate Change Challenges, November 13-15, Washington, DC
- PANAM XXII Conference, Guayaquil, Ecuador

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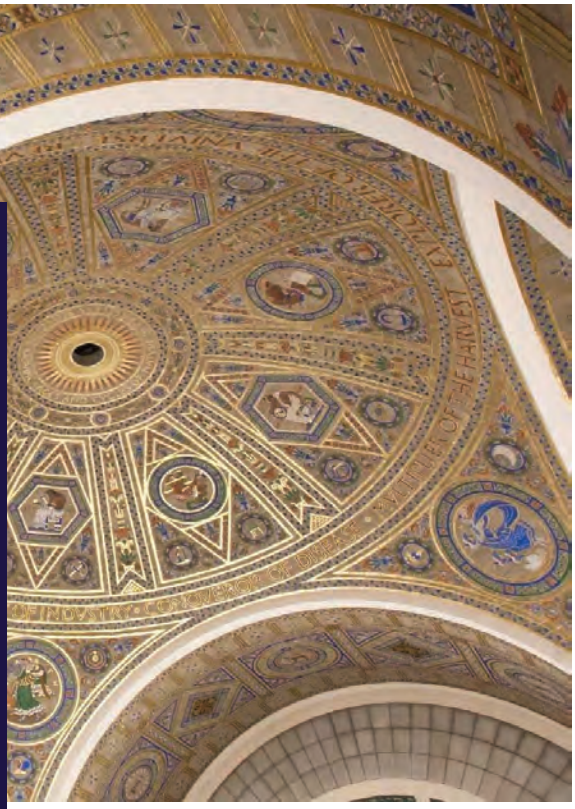
Marine Board of the Transportation Research Board

TRB Executive Committee Meeting *January 2023*

Dr. Craig Philip, NAE, Chair
Dr. Sandra Knight, Vice Chair
Scott Brotemarkle, Marine Board Program Director
Tess Austin, Marine Board Staff



JULY 25, 2022

Marine Board of the TRB

- Formed in 1965 to serve the national interest by providing a forum for the identification of research and development needs and information exchange concerning technologies, policies, economics, the environment, and other issues affecting the marine transportation system and offshore industries.
- Internationally recognized source of expertise on maritime transportation, marine technology, and offshore development.
- Affiliation with TRB enables the Board to develop activities that encourage discussion and examination of maritime transportation, marine policy issues, and technology developments in a broad multimodal/multidisciplinary context.

Core Sponsors of the Marine Board

- U.S. Coast Guard
- U.S. Army Corps of Engineers*
- National Oceanic and Atmospheric Administration/National Ocean Service
- Bureau of Safety and Environmental Enforcement
- Maritime Administration
- Office of Naval Research/U.S. Navy
- Supervisor of Salvage & Diving, Naval Sea Systems Command/U.S. Navy

*denotes TRB Core Sponsor in addition to Marine Board Sponsor

New Members as of Nov 1

- **Christopher Hart**
  - Prior Member of the National Transportation Safety Board (NTSB) from 2009 until January 2018, where he served as Chairman, Vice Chairman, and Member.
  - Served in senior positions at the Federal Aviation Administration (FAA), he was Deputy Administrator for the National Highway Traffic Safety Administration (NHTSA), and he has served in a variety of legal positions.
- **Lance Manuel**
  - Texas Atomic Energy Research Foundation Professor of Engineering at The University of Texas at Austin.
  - Research is primarily related to quantification of uncertainties in load and response characteristics of engineered systems, with a prime focus on offshore/marine systems, civil engineering infrastructure systems, and energy generation.
- **Jane McKee Smith, *NAE***
  - Research Professor, Department of Civil and Coastal Engineering, University of Florida
  - Emeritus Senior Scientist, US Army Engineer Research and Development Center. C
  - Coastal engineering researcher with 39-yrs experience

New Members as of Nov 1

- **VADM Peter Neffenger (USCG-Ret.)**
  - Appointed in 2015 by President Barack Obama to lead the Transportation Security Administration (TSA), a position he held until January 2017.
  - Distinguished 34-year career in the U.S. Coast Guard, where he served as the 29th Vice Commandant, the head of Coast Guard global operations, and most notably as the Deputy National Incident Commander for the 2010 Gulf oil spill, the largest and most complex in U.S. history.
- **Chris Wiernicki, *NAE***
  - Chairman, President and CEO of the American Bureau of Shipping (ABS) and Chairman of the ABS Group of Companies, Inc. (ABS Group)
  - Served as Chairman of the International Association of Classification Societies and held senior roles at ABS, including President and Chief Operating Officer (COO), Chief Technology Officer and President and COO of ABS Europe Ltd.
  - Prior to joining ABS, Wiernicki was the CEO of Designers & Planners, Inc.

2023 Marine Board Areas of Interest

- Emerging Technologies and Potential Impacts on Maritime
- Environmental Justice and Social Equity in the Marine Transportation System **NEW**
- Future of the Maritime Supply Chain
- Maritime Resilience
- Towards Zero Emissions Shipping
- U.S. Offshore Wind Energy Development
- U.S. Maritime Policy

<u>Crosscutting Elements</u>

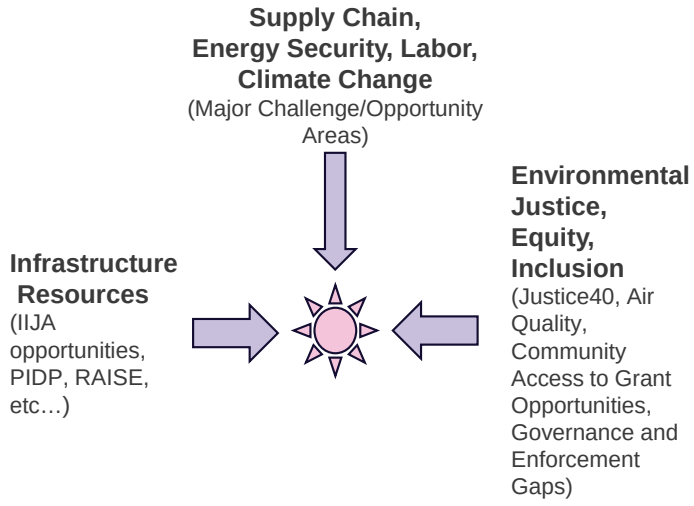
- Human and Intellectual Capital / Workforce Diversity Equity, and Inclusion **EXPANDED**
- Safety Management, Culture and Inspections
- Cyber in the Marine Transportation System

Marine Board Fall 2022 Meeting

Maritime Infrastructure Investments: Environmental Justice Impacts, Equity & Systemic Considerations in Near Port Communities

The near port community impacts resulting from cargo surges emanating from the Ports of Los Angeles and Long Beach are indicative of a disconnect between ever growing freight capacity needs and equitable environmental and social justice policies being sought at many levels of governance in the spirit of diversity, equity and inclusion. This was made apparent during the Marine Board Spring Meeting during which we toured the Ports of LA / LB.

The Marine Board Fall Meeting examined policy and governance gaps within the context of the infrastructure opportunities associated with the IIJA and other discretionary grant programs available to seaports, intermodal facilities, and near port areas with an eye toward identifying research needs and potential best practices that could better align infrastructure funding decisions with the equitable environmental and social justice policies being sought by public sector agencies.



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Fall 2022 Meeting – Building Equity into Infrastructure

- **Impacts on Near Port Communities** –
  - Federal Funding Opportunities
  - Potential Projects
- **Supply Chain Neighbor Spotlights:** *Wilmington, Los Angeles, CA;*
  Pleasantville, TX; South Bronx, NY
- **Federal Tools and Strategies**
- **Innovative Approaches** to DEI and Infrastructure Development
- **Research Needs Breakout Discussions**

Top right: Containers are piled high on Drumm Ave.,
Wilmington/Port of Los Angeles,
Bottom right: Residents protest truck traffic. Both: LA Times,1 March 2022

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Spring 2022 Meeting

Port of Virginia / Newport News Shipbuilding, Norfolk VA
April 17-19, 2023

An illustration of Great Lakes Dredge and Docks' Jones Act-compliant rock installation vessel that will support the growing U.S. offshore wind industry. Illustration courtesy Great Lakes Dredge & Dock

- **Workforce, Training and Education Pipeline** – Shipbuilding Industry, Offshore Wind Industry, and Port Terminal Operations

- **Coastal Resiliency, Climate Change and Sea-Level Rise** - Impacts on Hampton Roads Maritime Infrastructure

- **Potential Technical Tours**: Newport News Shipbuilding; Port of Virginia; Dominion Offshore Wind; NOAA Marine Center

Aerial view of the Newport News shipyard

Top right: *Great Lakes Dredge and Dock rock installation vessel supporting offshore wind projects, gCaptain, 21 September 2022*
Bottom right: *Newport News Shipbuilding, 27 September 2022*

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Recent Studies of Interest

- Data, Metrics, and Analytic Methods for Assessing Equity Impacts of Surface Transportation Funding Programs (underway)
- New Coast Guard Authorities (underway)
- A Report Series on Progress and Opportunities Toward Decreasing the Risk of Offshore Energy Operations (underway)
- U.S. Coast Guard Oversight of Recognized Organizations (2021)
- Investing in Transportation Resilience: A Framework for Informed Choices (2021)
- Coast Guard Maritime Domain Awareness (2020)

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TRB – Marine Board On-going Activities

2022 Workshops and Conference Partnerships

- Society of Naval Architects and Marine Engineers (SNAME) Convention, September 2022, Houston, TX
- 2022 Maritime Risk Symposium – U.S. Coast Guard November 2022, Argonne National Lab, IL

Sponsor Leadership Meetings

- SUPSALV, MARAD (Summer 2022)
- USCG, USACE, NOAA (Fall 2022)
- BSEE, ONR (Spring 2023)

Continuing Partnerships with PIANC, SNAME

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TRB Strategic Communications Update for the Executive Committee

January 11-12, 2023

Paul Mackie, pmackie@nas.edu

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Branding work in 2022 included a new logo and replacing the old one online and in our promotional products.

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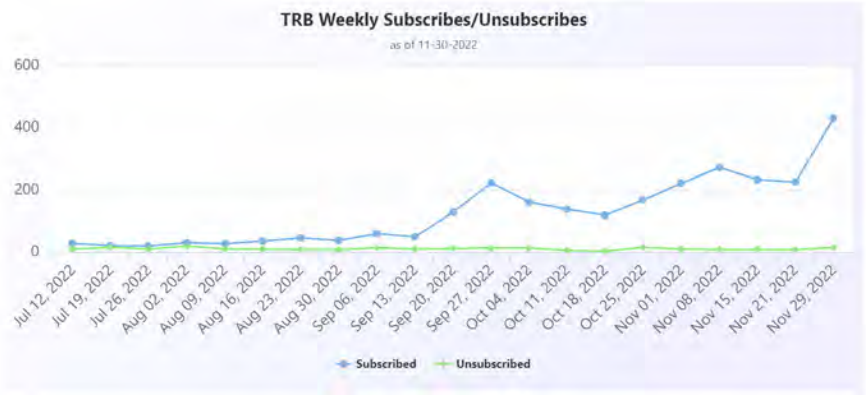
Newsletters continue to be our bread and butter.

The new *TRB Weekly* had 10,000 subscribers in late 2021 and 18,000+ as of early December 2022.

More than 32,000 subscribers receive our *Upcoming TRB Webinars* newsletter.

TRBAM Express has proven to be a popular benefit to conference attendees for 3 years now.



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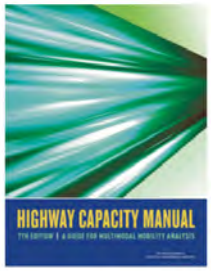
Media strategy has centered on promoting select newsworthy information to targeted journalist lists we build on various topics.

Average 100+ media articles mentioning TRB per month.

Provide TRB blogs and volunteers as sources for journalists.



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Social media continues to be a strong TRB property.

Growth in followers from end of 2019 to end of 2022:

LinkedIn: 6,900 → 17,400

Twitter: 22,000 → 25,000

Facebook: 7,500 → 10,000

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Well-documented communications strategies and processes continue with our latest example being the **TRBAM Crisis Comms Plan.**

TRB's Annual Report and **TRB.org** also keep getting better and better.

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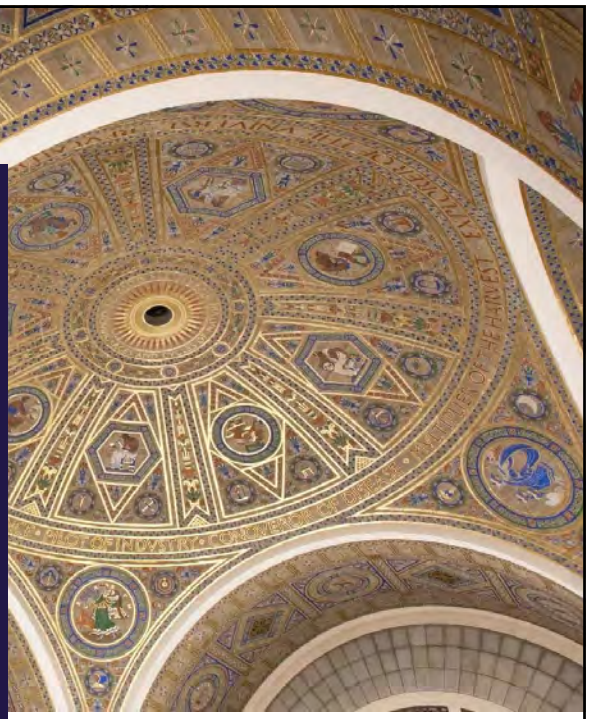
TRB Cooperative Research Programs

Director's Report to Executive Committee

January 2023



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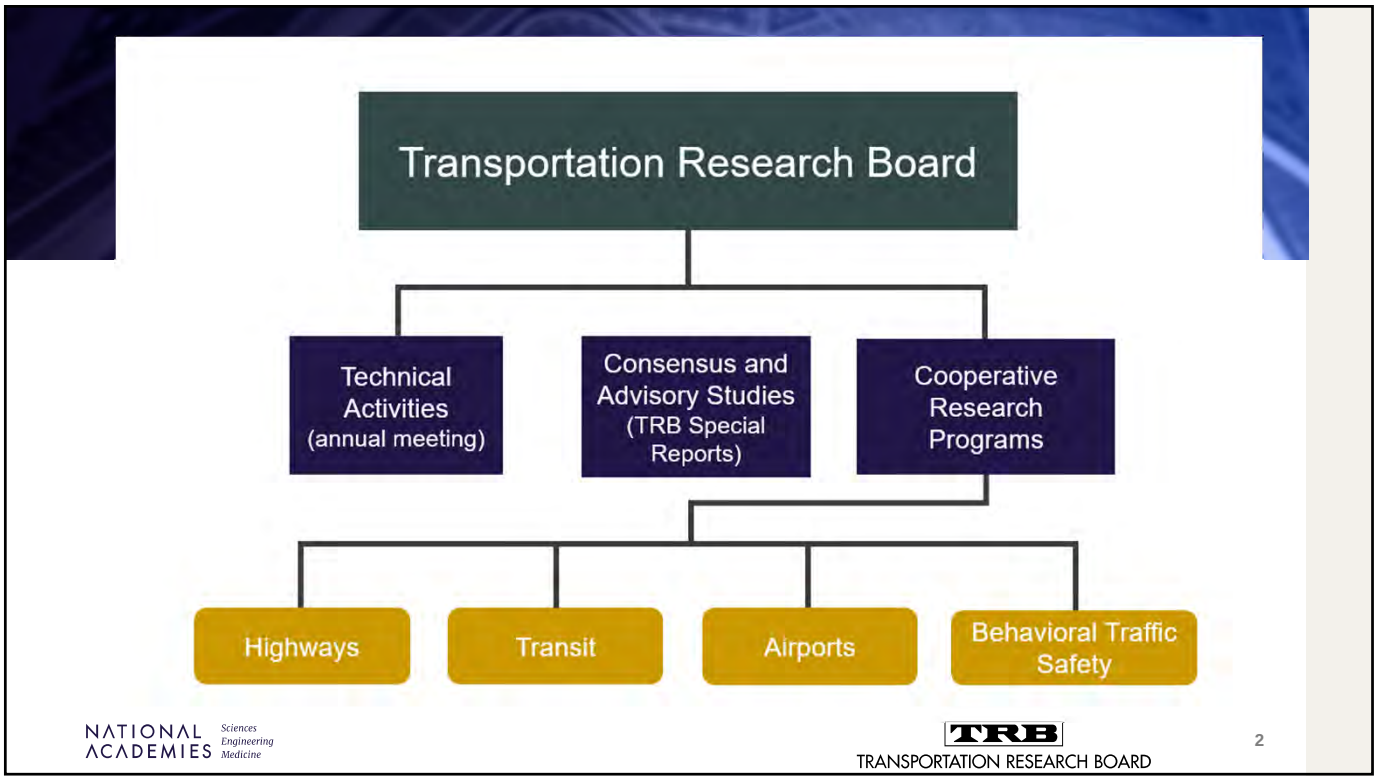

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TRB's Cooperative Research Programs

Program	Funded Years	Annual Budget	Partners
NCHRP (Highways)	1962–	$54M	FHWA, AASHTO
TCRP (Transit)	1992–	$6.6M	FTA, APTA
ACRP (Airports)	2004–	$15M	FAA, ACI, AAAE + …
BTSCRP (Behavioral Traffic Safety)	2017–	$3.5M	NHTSA, GHSA

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Each TRB Cooperative Research Program is a **cooperative** partnership

between TRB, a federal agency, and stakeholder associations that provides a neutral and objective platform to address common research needs.

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Governance:

Joel Jundt
Chair, AASHTO Special Committee on Research and Innovation

Rhonda Hamm-Niebruegge
Chair, ACRP Oversight Committee

Doran Barnes
Chair, TCRP Oversight and Project Selection Commission

Mark Ezzell
Chair, Governors Highway Safety Association Research Committee

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No. 1 CRP success factor:

Industry partners (stakeholders) are involved in the program from problem identification to implementation of research results

- Submission of problem statements
- Review of problem statements
- Selection of projects
- Membership on advisory panels
- Development of RFPs
- Selection of contractors
- Oversight of research
- Implementation of results

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Highlights of 2022

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National Cooperative Highway Research Program NCHRP

Waseem Dekelbab
NCHRP Manager

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Some key events in 2022:

- Appointment of Waseem Dekelbab as NCHRP Manager
- 60th year of research supporting state DOTs
- $4 million allocated to support the nation in preparing for weather-related and climate-related disasters
- AASHTO Board of Directors adoption of “Development of a National Vision for the Future of Transportation and Individual and Collective Actions for State Departments of Transportation to Make Progress toward the Vision.”

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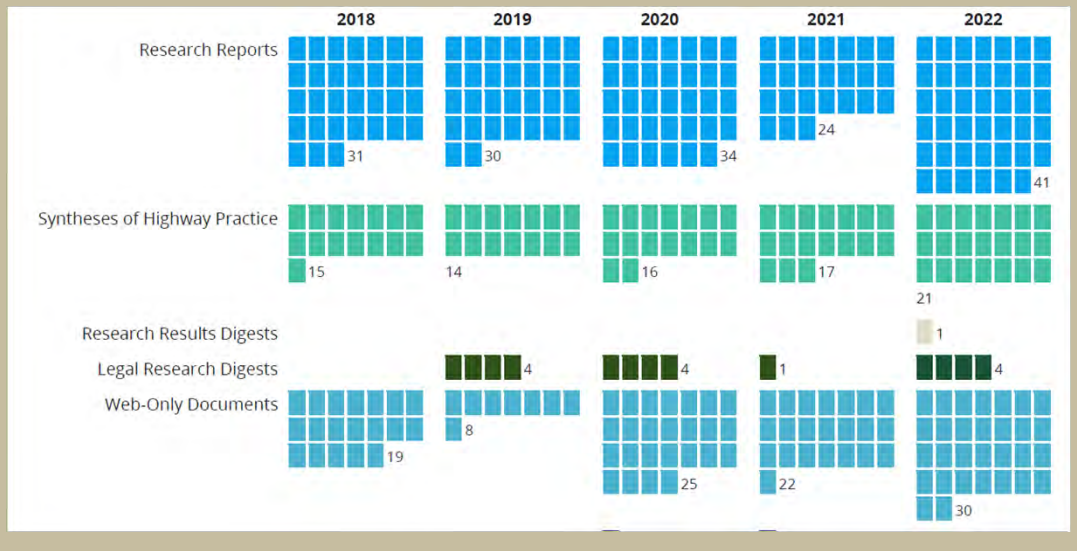
NCHRP Research Products Produced, CY 2018 through CY 2022



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Projects	2019	2020	2021	2022	2023
Continuing projects	11	11	11	12	12
New projects	47	56	47	49	61
Total projects	58	67	58	61	73
Total project funds	**$34,429,000**	**$33,330,000**	**$31,304,200**	**$31,893,000**	**$40,524,000**

- 118 research projects completed
- 98 publications
- 160 new projects approved (including Synthesis, IDEA, Legal Digest, etc.)

Some key reports in 2022:

Publication	Publication Title
Research Report 985	Integrating Effective Transportation Performance, Risk, and Asset Management Practices
Research Report 988	Rural Transportation Issues: Research Roadmap
Research Report 1003	Guide to Alternative Technologies for Preventing and Mitigating Vehicle Intrusions into Highway Work Zones
Research Report 998	Planning Freight-Efficient Land Uses: Methodology, Strategies, and Tools
Research Report 1004	Federal Funding Uncertainty in State, Local, and Regional Departments of Transportation: Impacts, Responses, and Adaptations
Research Report 1006	Guide to Understanding Effects of Raising Speed Limits
Research Report 1008	Attracting, Retaining, and Developing the 2030 Transportation Workforce: Design, Construction, and Maintenance
Research Report 1001	Framework for Assessing Potential Safety Impacts of Automated Driving Systems

Some key reports in 2022 cont'd:

Publication	Publication Title
Research Report 1000	Accessibility Measures in Practice: A Guide for Transportation Agencies
Web-Only Document 308	Methods for State DOTs to Reduce Greenhouse Gas Emissions from the Transportation Sector
Web-Only Document 323	Highway Safety Manual User Guide
Web-Only Document 321	Command-Level Decision Making for Transportation Emergency Managers
Web-Only Document 317	Developing a Guide for Managing Performance to Enhance Decision Making
Synthesis 584	Visualization of Highway Performance Measures
Synthesis 591	Use of Safety Management Systems in Managing Highway Maintenance Worker Safety
Synthesis 594	Technological Capabilities of Departments of Transportation for Digital Project Management and Delivery
Synthesis 597	Micromobility Policies, Permits, and Practices

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Airport Cooperative Research Program ACRP

Marci Greenberger
ACRP Manager

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Recent ACRP Reports:

ACRP Research Report 236: Preparing Your Airport for Electric Aircraft and Hydrogen Technologies

ACRP Research Report 237: Primer and Framework for Considering an Airport Noise and Operations Monitoring System

ACRP Research Report 241: Toward a Touchless Airport Journey

ACRP Research Report 246: Airside Operations Safety: Understanding the Effects of Human Factors

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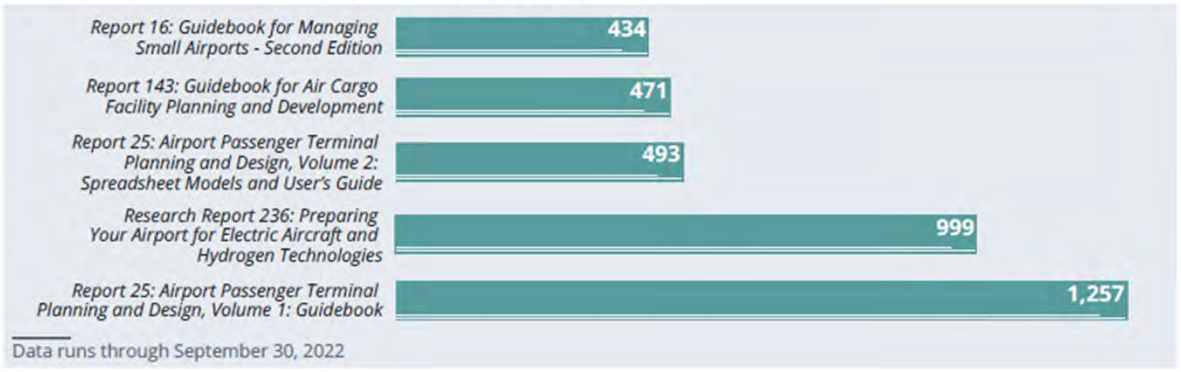
Publications with the Most Downloads in 2022



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ACRP UNIVERSITY DESIGN COMPETITION and GRADUATE RESEARCH AWARDS

…to create innovative design solutions to address airport issues, and

…to support applied research on airport and related aviation system issues to improve the quality, reliability, safety, and security of the civil aviation system

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Behavioral Traffic Safety CRP

Six reports published in 2022:

- Guidance For Employer-based Behavioral Traffic Safety Programs In The Workplace
- Guide For Behavioral Traffic Safety Messaging On Variable Message Signs
- Assessing The Impacts Of Connected, Automated, And Autonomous Vehicles On The Future Of Transportation Safety
- Naturalistic Driving Study Database To Improve Teen Driving Safety: Phase 1 Proof Of Concept
- Influence Of Infrastructure Design On Distracted Driving
- E-scooter Safety Issues And Solutions

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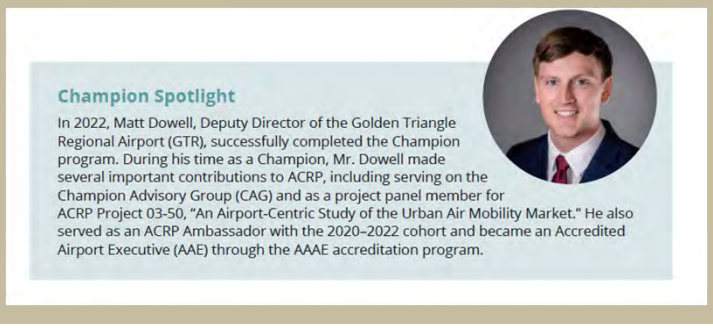
TCRP and ACRP *Champions* Program

- Early- and mid-career professionals who conduct "missions" to build knowledge and drive engagement in the two research programs.
- Opportunity to gain professional development and expand networks



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Transit Cooperative Research Program TCRP

TCRP Oversight and Project Selection Commission, Nov 4 2022

Gwen Chisholm-Smith, TCRP Manager

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Selection of TCRP Reports in 2022:

- *Report 232: The **Impacts of Vehicle Automation** on the Public Transportation Workforce*
- *Report 233: Strategies for Deterring **Trespassing** on Rail Transit and Commuter Rail Rights of-Way, Volume 1: Guidebook* and *Volume 2: Research Overview*
- *Synthesis 163: Considering the Unbanked in **Cashless Fare Payment** at Point of Service for Bus/Demand-Response Services*
- *Synthesis 164: **Bus Rapid Transit**: Current State of Practice*
- *Synthesis 159: Assessing **Equity** and Identifying Impacts Associated with Bus Network Redesigns*

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Questions?

Chedges@nas.edu

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CONSENSUS AND ADVISORY STUDIES DIVISION
Director, Thomas Menzies

The Consensus and Advisory Studies Division provides consensus advice to the federal government and the transportation community more broadly based upon the deliberations of special, ad hoc committees appointed by the chair of the National Research Council.

INFORMATION AND DISCUSSION ITEMS

Studies Completed in 2022	Information
Studies Underway	Information
Pending and Potential Studies	Information
Study on Women in the Transportation Workforce—Task Statement	Information

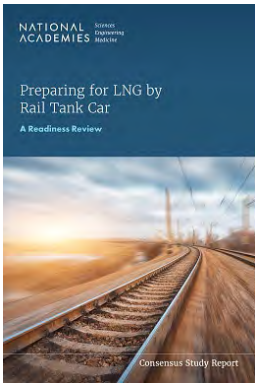
Consensus Studies, Completed Reports 2022

Special Report 344: Emerging Hazards in Commercial Aviation—Report 1: Initial Assessment of Safety Data and Analysis Processes

This Phase 1 report of a multi-year study develops a conceptual framework describing how safety is monitored in complex systems such as aviation; reviews how safety cultures influence the behavior of organizations and how these cultures can be assessed; and reviews the primary data types and sources analyzed to monitor hazards in commercial aviation. The report explains how Phase 2 will use a strategic foresight strategy known as horizon scanning to identify emerging trends in aviation safety through facilitated workshop activities with broad input from diverse experts.

Special Report 345: Preparing for LNG by Rail Tank Car: A Readiness Review

As the domestic production of natural gas and demand from export markets has grown over the past decade, so too has demand for producing and transporting liquefied natural gas (LNG). This report identifies areas where additional investigation, analysis, and monitoring may be warranted so that industry and regulators can better assess LNG's risks in rail transportation and make choices about how best to manage those risks.



STATUS OF CONSENSUS STUDIES AND OTHER ACTIVITIES UNDERWAY

(Expenditures through November 2023)

PROJECT	SPONSOR	FUNDED AMOUNT	SPENT	SCHEDULE BEGAN	COMPLETION	COMMENT
1. Research and Technology Coordinating Committee	FHWA	$473,000	58%	10/2003	9/2023 (new award anticipated)	Next meeting: Spring 2023
2. Long-term Infrastructure Performance	FHWA	$210,0000 annually for 5 years	15%	6/2022	6/2027	Letter report due end of January 2023. Next meeting: Fall 2023
3. Transit Research Analysis Committee	FTA	$145,000	80%	9/2003	3/2023 (new award anticipated)	Next meeting Spring 2023
4. AV/Shared Mobility Forum	multiple	$368,000	50%	1/2018	continuing	Next event: Summer 2023
5. Emerging Aviation Safety Trends (Phase 2)	FAA	$613,000	10%	8/2022	7/2024	Phase 2 underway. Next meeting: April 2023
6. Gulf of Mexico Offshore Energy Production Safety Risks	Gulf Research Program	$962,000	90%	1/2020	3/2023	Report in peer review. Publication expected: January 2023
7. Automatic Shutoff Valves for Pipelines	PHMSA	$720,000	40%	8/2021	7/2023	Next meeting: Spring 2023
8. Repurposing Plastics Waste in Infrastructure	USDOT/EPA	$1,600,000	40%	9/2021	9/2023	Next meeting: February 2023

STATUS OF CONSENSUS STUDIES AND OTHER ACTIVITIES UNDERWAY

(Expenditures through November 2023)

9. Future Authorities for Coast Guard	USCG	$780,000	70%	9/2021	8/2023	Next meeting January 2023
10. Transportation Equity Metrics	USDOT/TRB	$1,000,000	50%	9/2021	9/2023	Next meeting: February 2023
11. Substance Abuse Treatment Programs for Airline Flight Crew	FAA	$1,000,000	45%	3/2022	12/2023	Collaboration with DBASSE leading. Next meeting Winter 2023
12. Safety Research to Practice	FHWA/NCHRP /IIHS	700,000	20%	6/2022	6/2025	Next meeting February 2023
13. Certificate of Compliance Inspection Program	USCG	625,000	12%	7/2022	1/2024	Next meeting: January 2023
14. Impacts of Truck and Bus Driver Compensation Methods	FMCSA	1,250,000	10%	7/2022	7/2024	Next meeting: January 2023
15. Impacts of Trains Longer than 7,500 feet	FRA	1,200,000	4%	9/2022	6/2024	Next meeting: Spring 2023
16. Best Practices for Chassis Provisioning	FMC	500,000	3%	9/2022	9/2022	Next meeting: February 2023

SUMMARY OF PENDING AND POTENTIAL STUDIES

Study	Sponsor	Scope	Status
1. Stormwater Best Management Practices	FHWA	Make recommendations on the evaluation and selection by state DOTs of transportation of potential stormwater management and total maximum daily load compliance strategies	**Enacted** in Sec. 11520 of IIJA**.** Discussions underway with FHWA.
2. Transportation Workforce Development	OST	Workforce needs assessment that addresses the education and recruitment of technical workers for the intelligent transportation technologies and systems industry	**Enacted in** Sec. 25020 of IIJA.
3. Impacts on Shipping and Fisheries of Renewable Energy Facilities on West Coast	DOI	Identify and analyze where fisheries are likely to shift in the future and how shipping lanes and Coast Guard operations relevant to fishing activities will be affected by the of renewable energy facilities on the West Coast	National Defense Authorization and Appropriation Act for FY2023, Section 11319 **Passed by House**, December 6, 2022; awaiting Senate action (as of Dec 9).

4. Alcohol at Sea	Coast Guard	Determine safe levels of alcohol consumption and possession by crew members aboard vessels of the United States engaged in commercial service.	National Defense Authorization and Appropriation Act for FY2023, Section 11606 **Passed by House**, December 6, 2022; awaiting Senate action (as of Dec 9).

Study on Attracting, Retaining, and Advancing Women in Transportation

Statement of Task

A consensus study committee will examine current trends and patterns of employment of women in the U.S. transportation sector. The study will consider women's employment trends and patterns in management positions, engineering and other technical occupations, and in service, operations, and other frontline jobs in public and private transportation organizations across all major modes. Where women appear to be substantially underrepresented in occupations, including leadership positions, the committee will identify potential reasons, including known barriers such as cultural and social factors, concerns about safety and health, work-life balance issues, and traditionally male-based recruitment and promotional strategies. Consideration will be given to how the pandemic may have affected and added to the barriers and to the opportunities and challenges faced by women. The study will take an intersectional approach and consider how the intersection of multiple identities (e.g. race, gender, age) can affect participation in the transportation workforce.

The committee will consider the advantages to individuals, organizations, the design and structuring of transportation services, and society generally in reducing and removing these barriers and seeking to recruit women to enter and remain in the transportation workforce. The committee will identify strategies for overcoming these barriers by reviewing the literature and consulting with organizations, both within and outside transportation, that have succeeded in recruiting, retaining, and furthering the careers of women in nontraditional and underrepresented occupations. It is expected that these strategies will span efforts to make transportation an attractive career path for women when making early educational choices to the strategies that are, or could, be employed by transportation organizations to retain women workers and offer them more opportunities for career advancement.

The committee will identify the data and research needed to understand how equitable participation in the transportation workforce is trending and to identify and assess the strategies needed to overcome emerging and persistent barriers. The committee may make recommendations about strategies and policies that could be pursued by public and private transportation agencies, as well as other institutions important to the transportation education and career pipeline, to recruit, retain, and advance women in transportation.

Background/Justification

According to the U.S. Bureau of Labor Statistics, women made up nearly half the U.S. labor force in 2019. Moreover, they earned the majority of certificates, associate degrees, and bachelor's degrees in the U.S. (National Center for Education and Statistics 2019). Yet, even as women making up more of the workforce, they have made only limited gains in many occupations, as some industries continue to struggle with recruiting and retaining women.

The U.S. Labor Department's Women's Bureau defines a nontraditional occupation as one in which women make up 25 percent or less of the workforce. These nontraditional occupations are often higher paying than the occupations in which women are more likely to dominate, such as teaching and retail sales. The Women's Bureau has observed that women who work in

nontraditional occupations, such as firefighting and engineering, increase their wages and opportunities for advancement relative to work in traditional occupations.

Transportation is one of the industries that has many occupations with low participation of women. The U.S. Census Bureau's American Community Survey found women accounted for only 12 percent of positions in transportation in 2000. This percentage had increased by 2017, but only to 15 percent. The transportation occupations that were surveyed are wide-ranging, from managers, engineers, surveyors, and technicians to air traffic controllers, flight attendants, pilots, and operators of trucks, buses, trains, and ships.

Furthermore, even within transportation sectors and organizations where there is relative parity in the workforce, there are notable disparities in the occupations by gender. For example, according to analyses of data collected by the U.S. Bureau of Labor Statistics, women made up 39 percent of the occupations of transit and ground passenger transportation in 2019; however, the percentage varied substantially depending on the line of work. Notably, women held only 11 percent and 21 percent of corporate management and supervisory positions (National Transportation Institute 2017). The experience is similar in the EU, where women hold less than 10 percent of the technical and operational jobs in urban public transport.

A recent Transit Cooperative Research Board (TCRP) synthesis pointed to certain occupational barriers to women in the transit industry. They include a general lack of outreach and promotional strategies that focus on women, social factors that lead to a message that men traditionally perform certain jobs, safety and health concerns, and challenges with accommodating responsibilities outside of work. These barriers are likely to be found in many transportation industries in addition to transit.

The disparities resulting from such barriers are problematic on multiple levels. As noted, women miss out on higher paying jobs, creating a persistent equity issue. Moreover, the transportation sector is deprived of a vital source of talent. The trucking industry, for instance, claims there is a growing shortage of truck drivers; yet, women comprise less than 7 percent of all drivers. Once recruited, talented women must also be retained and tapped for leadership positions. Among workers over 25 years old in 2016, 39 percent of women had earned at least a bachelor's degree compared with 31 percent of men. Women have been increasingly earning degrees in STEM fields. For transportation firms that face the impeding loss of retiring managers and engineers, it will be an imperative that they create desirable career paths that will attract, retain, and lead to the promotion of women.

Key Sources for this Background

Susan Hanson and Elaine Murakami, "Women in Transportation," *Public Roads,* March/April 2010

Jodi Godfrey and Robert L. Bertini, "Attracting and Retaining Women in the Transportation Industry," Mineta Transportation Institute, 2019.

Allison Alexander, "Attracting, Retaining, and Advancing Women in Transit," TCRP Synthesis 147, 2020.

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Changes in Executive Committee Membership

New Officers

Dr. Shawn Wilson, Secretary, Louisiana Department of Transportation and Development (Chair)

Dr. Carol A. Lewis, Professor, Transportation Studies, Texas Southern University (Vice Chair)

New Incoming Members

Ms. Nancy T. Daubenberger, Commissioner, Minnesota Department of Transportation

Dr. Hani S. Mahmassani, W.A. Patterson Distinguished Chair in Transportation, Director, Transportation Center, Northwestern University

New Ex-Officio Members

Ms. Ann Carlson, Acting Administrator, National Highway Traffic Safety Administration

Mr. Shailen Bhatt, Administrator, Federal Highway Administration

Mr. Billy Nolen, Acting Administrator, Federal Aviation Administration

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EXECUTIVE COMMITTEE MEETINGS

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Victoria Sheehan

ASSOCIATE EXECUTIVE DIRECTOR
Russell Houston

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- Committee and Panel Approvals
- Communications
- Information Technology
- Transportation Research Information Services

STRATEGIC PROGRAM DEVELOPMENT DIRECTOR
Patrice Davenport

- Revenue Development
- Strategic Initiatives

SR. REPORT REVIEW OFFICER
Karen Febey

- Report Review
- Minority Student Fellows Program
- Inclusion & Diversity
- TRB Division Committee

HR DIRECTOR
Claudette Louard-Clarke

- Human Resources
- Staff Development Training

TECHNICAL ACTIVITIES
Ann Brach

- Annual Meeting Program
- Conferences and Workshops
- Marine Board
- Standing Technical Committees
- State Visits
- Transportation Research Record: Journal of the Transportation Research Board

Consensus and Advisory Studies Division
Thomas Menzies

- Consensus Studies
- Forums and Roundtables
- Research Program Advisory Committees

ADMINISTRATION AND FINANCE
Gary Walker

- Budgets and Finance
- Affiliates Accounts
- Publications Sales and Distribution
- Administrative Services

Note: organizationally is part of the Office of the Chief Financial Officer

COOPERATIVE RESEARCH PROGRAMS
Christopher Hedges

- National Cooperative Highway Research Program
- Airport Cooperative Research Program
- Transit Cooperative Research Program
- Behavioral Traffic Safety Cooperative Research Program

DESCRIPTIONS OF TRB DIVISIONS

EXECUTIVE OFFICE
Victoria F. Sheehan, Executive Director

TRB Executive Office

TRB's Executive Office is headed by Executive Director Victoria Sheehan. The TRB Executive Office provides policy and operational guidance for programs and activities; oversees committee and panel appointments and report review; provides support and direction for human resource issues and staffing needs; directs the Board's communications and information technology efforts; operates a bibliographic database of transportation research and provides library reference services; provides staff support to the Executive Committee and the TRB Division Committee; and maintains liaison with the executive offices of the National Academies of Sciences, Engineering, and Medicine, the Board's parent institution.

Oversight Activities

The Executive Office supports the work of the TRB Executive Committee, which provides policy direction to TRB programs and activities within the overall policies of the Academies. Oversight of committee and panel appointments and of report review is the responsibility of the TRB Division Committee, which ensures that TRB meets institutional standards and that its activities are appropriate for the Academies. As part of its oversight function, the committee monitors the Board's progress in expanding the representation of minorities and women on TRB committees and panels.

Chris Hendrickson, Chair, TRB Division Committee, represents TRB as an ex officio member on the NRC Governing Board. The Executive Office processes the Board's large volume of committee and panel appointments and maintains committee membership records. A hallmark of the Academies is its institutional process to ensure the independent, rigorous review of reports. In maintaining these high standards, TRB follows Academies' guidelines that carefully match the review criteria and procedures to the type of report.

Program Development and Strategic Initiatives

In addition, the Executive Office is responsible for ensuring stable, long-term revenue streams for TRB and for coordinating strategic initiatives across the board's various divisions. To carry out these responsibilities, the EO helps facilitate the increased use of technology to deliver TRB products and services; oversees the development and implementation of action plans for strategic, long term, cross cutting, and critical issues; encourages the exploration of new and innovative ways to facilitate information transfer within the rules of the Academies; helps promote the value of TRB products and services; oversees TRB's international participation strategy; administers the Minority Student Fellows Program; and is responsible for helping to ensure the continued development of the next generation of TRB volunteers.

Communications

The Executive Office is charged with developing, coordinating, and carrying out communications activities that span the entire organization. The following communications activities conducted by the NASEM's Office of the Chief Communications Officer are overseen by the Executive Office:

- The Transportation Research E-Newsletter is a free weekly electronic service designed to keep individuals up-to-date on TRB activities and to highlight selected transportation research related activities taking place at the federal and state levels, and within the academic and international transportation communities. More than 67,000 people from around the world receive the E-Newsletter.
- The TRB Webinar Series produces approximately 100 webinars per year on a variety of topics. TRB's webinars are produced with funding received from TRB Sponsors and TRB Sustaining Affiliates. Accordingly, employees of TRB Sponsors and TRB Sustaining Affiliates may attend the session without a fee. TRB is authorized to issue Professional Development Hours (PDH) for select, live webinars. TRB is also registered with the American Planning Association's professional institute, the American Institute of Certified Planners (AICP), to provide Certification Maintenance credits.
- TRB uses Social Media such as Twitter, Facebook, and LinkedIn to help our audience stay connected to transportation research. Social media also helps TRB to better understand how its reports and products are being used.

Information Technology and Research Services

TRB has a consolidated Information Technology (IT) and Transportation Research Information Services (TRIS) department. Both groups have key responsibilities that include the development, maintenance, and application of software in support of various TRB missions.

The IT group's primary focus are systems operation, maintenance, and management. The focus aligns with the TRIS staff's responsibilities in relation to the Transport Research International Documentation (TRID) database, the Research in Progress (RiP) database and website, the Research Needs Statements (RNS) database, and the TRB Publications Index.

The responsibilities of the IT and Research Services groups include customer support for internal and external users of TRB's software systems; software enhancement and development; server and website monitoring and security; general IT support activities, such as training, documentation, and troubleshooting; and management and operation of transportation research services, bibliographic databases, and the TRB Library.

TRID

In January 2011, TRB and ITRD released TRID, the TRIS and ITRD Database. TRID is the world's largest and most comprehensive bibliographic resource on transportation research information. It is produced and maintained by the Transportation Research Board of the US National Academies with sponsorship by State Departments of Transportation, the various

administrations at the U.S. Department of Transportation, and other sponsors of TRB's core technical activities. ITRD is produced by ITRD member organizations under the sponsorship of Joint Transport Research Centre (collectively JTRC) of the International Transport Forum and Organisation for Economic Co-operation and Development (OECD) and ITRD. The records comprise published or ongoing research in English, German, French, or Spanish; more than 200,000 records link to full-text publications. The service offers simple and advanced searching and allows users to download and e-mail results, as well as to share via social media. TRID is available free of charge on TRB's website.

Publications Index

The TRB Publications Index includes more than 65,000 citations and abstracts for all TRB, Highway Research Board (HRB), Strategic Highway Research Program (SHRP), and Marine Board publications since 1923. The index offers simple and advanced searching and allows users to download and e-mail the results in a variety of formats. Records contain links to available full-text documents and to ordering information.

Research Needs Statements Database

The RNS database is a dynamic collection of highest-priority topics developed by TRB technical standing committees. The database serves as a tool for reviewing research needs, setting research priorities, and identifying gaps in current research.

Research in Progress Database

RiP is a searchable database of records of active or recently completed research projects from State Departments of Transportation, the modal administrations at the U.S. Department of Transportation, the Transportation Research Board, and university transportation centers. The current awareness service notifies users about new and updated project records in specified subject areas. TRID offers users an option for searching the RiP database or the RiP and TRID databases simultaneously.

TRB Library

The TRB Library provides research and reference services to TRB sponsors, committee members, and staff. The library subscribes to almost 250 serial titles and contains the complete collection of TRB, HRB, SHRP, and Marine Board publications.

The TRB Library participates in the Eastern Transportation Knowledge Network and in the National Transportation Knowledge Network.

TECHNICAL ACTIVITIES
Ann Brach, Director

About the Technical Activities Division

Who We Are
The Technical Activities Division provides a forum for transportation professionals to identify, facilitate, and share research and information related to transportation. The Division carries out activities on behalf of TRB sponsors and the transportation community through a network of over 200 standing committees comprised of more than 5,000 volunteers.

Our Mission
The Technical Activities Division supports TRB's mission of promoting innovation and progress in transportation through research and information exchange by identifying needed research and research in progress, and disseminating completed research results.

Our Staff
The Technical Activities Division staff consists of specialists within each transportation mode and topic, as well as specialists in publishing, meeting logistics, and business operations. They oversee the activities of the Division's network of volunteers, who carry out the following activities:

Our Activities
- **Standing committees and task forces** provide an opportunity for you to network with others in your field, and stay current on emerging issues while contributing to the continuing evolution of transportation research and practice. Learn how to get involved in standing committees.

- **Technical Activities Council**, consisting of the overall Chair and the Chairs of each of the Groups of committees, provides a forum for interchange between the Groups of committees. They assist in identifying emerging topics of interest to the transportation community and cross-cutting issues, and foster outreach efforts to other transportation organizations.

- **Conferences, Meetings, Webinars, and Workshops** are sponsored and co-sponsored by many of the Division's standing committees.

- **TRB Annual Meeting** is hosted every year and is the largest transportation conference in the world with over 700 sessions, workshops and 300 meetings that attracts over 14,000 professionals from around the globe. The Annual Meeting is held in January of every year in Washington, DC.

- **Supporting State DOT Representatives & Our Field Visit Program** serves as a major source of information collected and disseminated by TRB. Transportation professionals on the TRB staff meet on site with representatives of state departments of transportation, and with representatives of universities, transit, and other modal agencies and industry. Annual results of field visits are published each year.

- **Publications** are disseminated by the Technical Activities Division that showcase transportation research results through Transportation Research Records, Conference Proceedings, and Transportation Research Circulars.

CONSENSUS AND ADVISORY STUDIES
Tom Menzies, Director

Consensus and Advisory Studies Division

The Consensus and Advisory Studies Division conducts consensus and advisory studies at the request of the U.S. Congress, executive branch agencies, states, and other sponsors.

CONSENSUS AND ADVISORY STUDIES

With the guidance of committees drawn from the nation's leading experts, the Consensus and Advisory Studies unit produces reports examining complex and controversial transportation issues. Studies cover all modes of transportation and a variety of safety, economic, environmental, and research policy issues. The U.S. Congress and the executive branch have adopted many recommendations from the reports, attesting to the substantive value of the studies. The TRB Executive Committee's Subcommittee on Planning and Policy Review provides oversight for the unit. All completed consensus reports, dating from 1982, are posted on the TRB website, http://www.trb.org/Publications/PubsPolicyStudiesSpecialReports.aspx.

Cooperative Research Programs Division
Christopher Hedges, Director

The Cooperative Research Programs Division of the TRB, led by Director Christopher Hedges, administers a number of major research programs sponsored by other organizations.

National Cooperative Highway Research Program
Sponsored by the member departments of the American Association of State Highway and Transportation Officials (AASHTO) in cooperation with the Federal Highway Administration, the NCHRP was created in 1962 as a means to accelerate research on problems that affect highway planning, design, construction, operation, and maintenance nationwide. All of the state highway and transportation departments contribute to an annual cooperative pool to fund the program's activities. AASHTO committees and member departments and the Federal Highway Administration recommend research topics each year, and the AASHTO Special Committee on Research and Innovation (R&I) determines both the projects to be funded and the levels of funding for those projects. A close working relationship with AASHTO during execution of the

projects and the participation of experienced practitioners on project panels help ensure the application of completed NCHRP study results.

Transit Cooperative Research Program

The TCRP was initiated in 1992 by three cooperating organizations: the Federal Transit Administration, the program sponsor; the Transit Development Corporation, a nonprofit educational and research organization established by the American Public Transportation Association, which provides program governance through the TCRP Oversight and Project Selection (TOPS) Committee; and the National Academies of Sciences, Engineering, and Medicine, acting through TRB, which serves as program manager. Under TCRP, the transit industry develops innovative near-term solutions to operating problems and adapts appropriate new technologies and approaches to help meet the demands placed on the nation's public transit systems. The program's research covers topics relating to all aspects of public transportation, including planning, service configuration, equipment, facilities, operations, human resources, maintenance, policy, and administrative practices. Each year, the TOPS Committee selects a program of research from the large number of candidate research problem statements submitted by organizations and individuals in the transit community.

Airport Cooperative Research Program

The ACRP was authorized in federal aviation legislation and funding is made available through the annual federal appropriations process. ACRP, which began in 2006, is an industry driven applied research program that develops near-term, practical solutions to problems faced by airport operators. The program is sponsored by the Federal Aviation Administration (FAA). Research topics are selected by an independent governing board appointed by the U.S. Secretary of Transportation that includes individuals from airports, universities, FAA, and the aviation industry.

PURPOSES AND DUTIES OF THE TRB EXECUTIVE COMMITTEE

The TRB Executive Committee is the senior policy body of TRB, composed of approximately 25 members appointed by the Chairman of the National Research Council (NRC). These members are selected so as to provide balanced representation of transportation modes, academic disciplines, private and public sectors, levels of government, geographical regions, and other relevant factors. Members are appointed for a term of three years and may be reappointed for one term. In addition, approximately 20 *ex officio* members serve on the Executive Committee; these members have no vote but otherwise participate fully in Executive Committee activity. *Ex officio* members include the representatives of the Board's various sponsoring organizations.

The Executive Committee meets twice a year, once at TRB's Annual Meeting in Washington each January and once in June. The Chair of TRB's Executive Committee, appointed by the Chairman of the NRC, serves a one-year term, and presides over the Committee discussions, which are directed toward obtaining consensus on issues wherever possible. When formal rules of debate are required, Roberts' Rules of Order are employed.

The Executive Committee performs a number of functions in serving four different constituencies — the National Research Council (NRC), TRB, TRB's sponsors, and itself.

Executive Committee Responsibilities to the NRC

The TRB Executive Committee is officially an advisory group to the Chairman and the Governing Board of the NRC, who look to the Executive Committee to provide oversight of TRB's activities. Such oversight is intended to ensure that TRB's activities are appropriate for the NRC and constructive to the transportation system and the nation. Reports (both written and oral) regarding ongoing and proposed TRB projects are brought to the Executive Committee at each meeting and are approved, rejected, or accepted after modification. The Board is also expected to note new opportunities for TRB to provide its services or projects and, where appropriate, to find ways to bring such projects into being.

The TRB Division Committee is charged to ensure that NRC procedures and policies are faithfully employed with respect to study and project committee appointments and report review. The membership of the TRB Division Committee is drawn from the membership of the TRB Executive Committee. The Division Committee is chaired by the TRB Division Chair, who must be a member of the National Academy of Sciences or the National Academy of Engineering and a member of the TRB Executive Committee. The TRB Division Chair serves as an *ex officio* member of the NRC Governing Board.

The Executive Committee has a Subcommittee on Planning and Policy Review (SPPR), which reviews and approves proposed projects and studies, develops lists of Critical Issues in Transportation, plans and develops opportunities for new Executive Committee initiatives, and generally handles those substantive transportation issues that require action during the interval between the twice-yearly meetings of the Executive Committee. The SPPR generally meets in April and October in Washington, DC.

The Executive Committee has a Subcommittee on International Activties, which provides oversight of TRB's international activities, including review of Memoranda of Understanding and Letters of Intent with international organizations, and monitoring progress in implementation of the Executive Committee's Strategic Plan for International Activities.

The Executive Committee has also established a Special Committee on Diversity, Equity, and Inclusion, which provides oversight of implementation of the Executive Committee's Diversity, Equity, and Inclusion Strategic Plan.

TRB's Expectations of the Executive Committee

Most TRB projects and activities are conducted by expert volunteers who agree to serve on TRB technical standing committees, study committees, panels, task forces, and other similar groups. At any one time, about 500 such groups are in existence, composed of more than 7,000 professionals serving without compensation. The Executive Committee, either directly or through the TRB Division Committee or the CAAS, provides oversight on the formation, termination, and membership of committees and on the review of projects undertaken and reports produced. The Executive Committee can also influence committee and other TRB activities by developing and monitoring strategic plans, preparing the critical transportation issues, and undertaking special activities of its own. From time to time, Executive Committee members are also called on to perform special duties, such as assisting with report review or fundraising for special projects.

The Executive Committee also serves as a symbol of the prestige attached to serving on TRB committees. Executive Committee members are selected in part because they occupy some of the most prestigious and influential positions in the industry. Their participation on the Executive Committee demonstrates support for research and cross-modal dialogue at the highest levels, and thereby provides motivation for the uncompensated service of otherwise highly paid experts on whom TRB depends for its products and services.

Sponsors' Expectations

At the core of TRB, and perhaps its most visible feature, is a collection of Technical Activities, which include more than 175 TRB standing committees, the TRB Annual Meeting, publications programs, field visits to organizations conducting transportation research, and information services. About $17 million—approximately one-fifth of TRB's total budget—is spent annually on these activities, supported by funding from individual states, federal agencies, private transportation organizations, local governments, individual affiliates, publication sales, and conference registration fees. These funds are pooled and spent in accordance with budgets approved by the Executive Committee. TRB's sponsors look to the Executive Committee to ensure that these funds are spent in ways appropriate to TRB's mission and in ways that encourage research and its dissemination.

Executive Committee's Own Expectations

Although the responsibilities summarized above indicate that the Executive Committee has more than enough duties for a group that only assembles twice a year, members often comment that their greatest personal satisfaction in serving comes from participating in discussions of substantive transportation issues and that they would like to devote more time at meetings to such discussion. The caliber and diversity of talent represented on the Executive Committee make serving on it a unique experience for most members, providing an unusual opportunity to share different perspectives in far-reaching

discussions of major transportation issues. Thus, an effort is made to conduct the Executive Committee's official business expeditiously at meetings, in order to leave time for these other important activities of the Board. Executive Committee policy sessions and other discussions of substantive issues have led to the initiation of important TRB projects and other activities.

Last updated January 3, 2023

TRB POLICY ON EXECUTIVE COMMITTEE PARTICIPATION IN COOPERATIVE RESEARCH PROGRAM (CRP) PROJECTS
Revised 1/8/2021

In the administration of its contract research programs, TRB wishes to maximize both the substance and the appearance of fairness in the selection and management of its contractors, at the same time ensuring the quality and expanding the number of potential researchers as much as possible.

It is in TRB's interest to use the expertise of the best qualified individuals and organizations available to perform its research programs, where no actual or apparent conflicts of interest exist. However, conflicts may arise or appear to exist if members of TRB's Executive Committee or organizations with which they are affiliated submit proposals on projects.

To prevent such problems in the administration of the Cooperative Research Programs (CRP) administered by TRB, members of the Executive Committee are not permitted to serve as principal investigators on any CRP projects. Additionally, the following rules will apply to all members of the Executive Committee:

1. No involvement is permitted in the selection process for CRP contractors, where the individual Executive Committee member or an affiliated organization is being considered.

2. No involvement is permitted in TRB's administration of a contract in which the individual or an affiliated organization is involved.

3. No involvement is permitted in setting or modifying administrative policies that would directly or materially affect either the administration of existing contracts with the individual or affiliate organization, or the individual's or affiliate organization's ability to submit proposals.

The Chair of the TRB Executive Committee, serving a one-year term; the Chair of the TRB Division Committee, serving a three-year term; and the Vice Chair of the Division Committee, serving a three-year term, have close ties to the Executive Director and to the activities of TRB. Neither of the Chairs nor the Vice Chair has any role in the selection of contractors for CRP projects. Nevertheless, because of these special relationships, the following additional rules also will apply to their activities on CRP projects during their terms as Executive Committee Chair, Division Committee Chair, and Division Committee Vice Chair:

4. Individuals serving in these positions may not personally propose on any CRP project during their years of service as Executive Committee Chair, Division Committee Chair, and Division Committee Vice Chair. This limitation on their right to propose on a CRP project as an individual does not extend to a governmental or academic entity with which they are affiliated provided that the individuals in question do not hold a significant financial interest (other than their salaries) in the governmental entity or academic institution of higher learning. Affiliated organizations in which an Executive Committee Chair, Division Committee Chair, or Division Committee Vice Chair holds a significant financial interest, other than a salary derived from a position in a governmental entity or an academic institution of higher learning, may also propose, but only in accordance with case-specific guidelines established by the Division Committee in advance of that individual's appointment as Executive Committee Chair, Division Committee Chair, or Division Committee Vice Chair to ensure that there is neither actual nor perceived conflict of interest.

5. They may not be personally consulted or participate in any way in the preparation of a proposal, or otherwise provide information that would be advantageous to a proposal team.

6. They may not work on a project as a member of the research team or as a consultant to the team.

Where a newly appointed Chair of the Executive Committee, Chair of the Division Committee, Vice Chair of the Division Committee, or other member of the Executive Committee has existing activities or commitments covered in the foregoing list of rules on a CRP project at the time of appointment, those activities will be reviewed and recommendations made on a case-by-case basis by the members of the Division Committee (exclusive of a newly appointed chair, vice chair, or member if his/her activities are being considered).

January 3, 2023

TRB STANDING OVERSIGHT COMMITTEES

TRB Division Committee

Composition

The Division Committee's membership, drawn from the TRB Executive Committee, consists of a chair who is an *ex officio* member of the Governing Board, a member of one of the Academies, the chair of the TRB Executive Committee, and a representative from a state department of transportation. The chair of the TRB Executive Committee serves a one-year term as a full member, while the other full members serve three-year terms. The Division Committee also includes the TRB Executive Committee's vice chair and immediate past chair as *ex officio* non-voting members who serve one-year terms.

Function

To ensure that TRB meets NRC standards for objectivity and that its activities are appropriate for the NRC; to monitor TRB with respect to specially funded project committee and panel appointments, report review, and the summary of Division programs presented to the NRC Governing Board. The Division Committee Chair serves as the TRB Division Chair for NRC Oversight and as an *ex officio* member of the NRC Governing Board.

Appointment Procedure

Appointed by NRC Chair upon recommendation of Executive Director in consultation with NRC and Chair of TRB Executive Committee, subject to approval of the NRC Governing Board. Appointment letters signed by NRC Chair. Selection of members complies with TRB *Terms of Reference*.

Subcommittee on Planning and Policy Review (SPPR)

Composition

Subcommittee of the TRB Executive Committee, composed of 11 members. The Chair and 10 other members serve 3-year terms.

Function

To advise the Executive Committee and staff on matters relating to selection, scope, and execution of policy-oriented studies within TRB; establish goals and directions for those parts of TRB engaged in policy studies; plan and develop opportunities for new Executive Committee initiatives; identify critical transportation issues warranting TRB consideration; act for Executive Committee on all matters requiring its attention between regular Executive Committee meetings; advise the Chairs of the Executive Committee and the Division Committee of actions taken; and report to the Executive Committee on all of its activities at each Executive Committee meeting. The SPPR is also charged to identify major transportation problems, with particular attention to multimodal and intermodal issues; propose action plans for TRB that address these problems; and suggest sources for the funds needed to pursue these plans. The SPPR also oversees TRB's strategic planning process,

including development of TRB Strategic Plans, and develops policy session agendas and other program initiatives of the TRB Executive Committee.

Appointment Procedure
Appointed by Chair of the TRB Executive Committee following guidelines approved by the Executive Committee. Bias/conflict-of-interest statements are not required.

Technical Activities Council (TAC)

Composition
The Technical Activities Council consists of the overall Chair, the Chairs of each of the eleven Groups, and one or more at-large members. All serve 3-year terms. Members who are in the second year of their 3-year term serve as the Council's representatives to the TRB Executive Committee, along with the Technical Activities Council Chair.

Function
Program Function: Provides a forum for interchange and interaction among the Groups, between the Groups and the TRB Executive Committee, and between the Groups and TRB staff. Assists in identifying emerging topics of interest to the transportation community and cross-cutting issues. Facilitates interaction among Groups, Sections, and committees to address cross-cutting issues and opportunities. Fosters outreach efforts to other transportation organizations and groups.

***Administrative Function*:** Plays a significant role in refining and implementing processes and techniques for improving the quality of meetings and publications emanating from Technical Activities Division volunteer activities. Serves as a focal point for the continuing review in each of the Group Executive Boards of the need for establishing new committees and for discharging those that are no longer necessary.

Appointment Procedure
Appointed by the TRB Executive Director with approval by Division Committee Chair. Bias/conflict of interest statements are required.

MARINE BOARD

Composition

15-20 members. The Chair and the other members serve 3-year terms.

Function

To identify research and policy study needs and provide a forum for the exchange of information relating to new technologies, laws and regulations, economics, the environment, and other issues affecting the marine transportation system, port operations, coastal engineering, and marine governance. Also, to oversee standing technical committees in related areas.

Appointment Procedure

Appointed by NRC Chair following recommendation of TRB Executive Director in consultation with NRC and members of Marine Board. Appointment letters are signed by the TRB Executive Director. Bias/conflict of interest statements are required.

COOPERATIVE RESEARCH PROGRAM OVERSIGHT COMMITTEES

Composition

Varies according to program and origin. Some oversight bodies (NCHRP, TCRP, and ACRP) are entities that are appointed and exist outside the NRC/TRB. Others may be internally appointed.

Function

To select research problems and program the funding for them, on behalf of the constituent user groups associated with the program.

Appointment Procedure

Varies according to program and origin. Internally appointed committees are appointed by TRB Executive Director following approval by SNO Chair and, as appropriate, by NRC Chair. Appointment letters are signed by the TRB Executive Director. Bias/conflict of interest statements are required.

TRB PROJECT APPROVAL PROCESSES

Policy Studies and Program Reviews

Description
Projects conducted by NRC-appointed committees that provide consensus findings, recommendations, advice

Approval Steps
Approval by TRB Executive Committee or Subcommittee on Planning and Policy Review; approval by Executive Committee of NRC Governing Board

Product
Full-length study reports, interim reports, letter reports

Conferences and Workshops

I. Organized by TRB Standing Technical Committees

Description
Outgrowth of standing committee activity; no significant outside funding; often self-supporting; no consensus findings, recommendations, or advice

Approval Steps
Approval by TRB Executive Committee or Subcommittee on Planning and Policy Review

Product
Transportation Research Circular

II. Organized by Other Organizations and Cosponsored by TRB

Description
Conference formats vary, but TRB must have a role in conference planning

Approval Steps
Approval by TRB Executive Committee or Subcommittee on Planning and Policy Review

Product
No TRB publication

III. Organized by Specially Appointed ("Ad Hoc") TRB/NRC Committee

Description
Supported by outside funding; may or may not lead to consensus findings, recommendations, or advice (most are not authorized to do so)

Approval Steps
Approval by TRB Executive Committee or Subcommittee on Planning and Policy Review; approval by Executive Committee of NRC Governing Board

Product
Conference or workshop report, summary, or proceedings (in the TRB Conference Proceedings series)

Cooperative Research Program Projects

Description
Supported by NCHRP, TCRP, ACRP, NCFRP, or HMCRP funding; projects selected by NRC/TRB-appointed oversight committees or by non-NRC/TRB entities representing the user communities; research conducted by contractors selected by individual project panels, which oversee the work and review final report

Approval Steps
Approval by the TRB Division Committee Chair of research problems selected by the non-NRC/TRB entities (SCOR, TOPS, and AOC Committees)

Product
CRP Reports, Research Results Digests

Synthesis Projects

Description
Supported by NCHRP, TCRP, ACRP, or FMCSA funding; projects selected by oversight panels representing the user communities; research conducted by contractors under the guidance of individual topic panels. Umbrella panels review final documents.

Approval Steps
Approval by the TRB Executive Director of research topics selected by oversight panels.

Product
Synthesis report

Transportation Research Board 2022 Annual Report (2022)

DETAILS

48 pages | 8.5 x 11 | PAPERBACK

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CONTRIBUTORS

Executive Office; Technical Activities Division; Transportation Research Board; National Academies of Sciences, Engineering, and Medicine

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TRANSPORTATION
RESEARCH BOARD

2022 ANNUAL REPORT

TRB TRANSPORTATION RESEARCH BOARD

NATIONAL ACADEMIES Sciences Engineering Medicine

About TRB and NASEM

The Transportation Research Board (TRB) is one of seven program divisions of the National Academies of Sciences, Engineering, and Medicine—a private, nonprofit institution that provides expert advice on some of the most pressing challenges facing the nation and world. The work of the National Academies helps shape sound policies, inform public opinion, and advance the pursuit of science, engineering, and medicine. Because TRB is housed within the National Academies, TRB's staff and volunteers have unequalled access to members of the Academies and their expertise.

TRB's mission is to mobilize expertise, experience, and knowledge to anticipate and solve complex transportation-related challenges. TRB's mission is accomplished through the hard work and dedication of more than 8,000 volunteers and a staff of 135 professionals.

WELCOME

A Message from TRB Leadership

We are pleased to present this annual report for the Transportation Research Board (TRB) of the National Academies of Sciences, Engineering, and Medicine on behalf of the TRB Executive Committee, the thousands of volunteers involved in TRB committees and project panels, and the TRB staff. TRB is focused on advancing transportation in light of the critical issues our industry faces. Work is underway to identify solutions and opportunities to improve climate resiliency and sustainability and promote economic opportunity, public health, safety, and equity. We continue to meet TRB's high standards for quality, objectivity, independence, nonpartisanship, integrity, and excellence. All that we do is based in evidence.

TRB provides leadership by advocating for improvements and innovation through trusted, timely, impartial, and evidence-based information exchange, research, and advice regarding all modes of transportation. This is accomplished through the hard work and dedication of more than 8,000 volunteers

Risdon Photography

Members of the Special Committee on Diversity, Equity, and Inclusion gather at the 2022 TRB Annual Meeting.

who are members of TRB's various committees and project panels, as well as TRB's 135 staff members. We tackle these challenges by embracing new methods of working together—through technology and in more traditional ways. TRB's Executive Committee has further embraced these innovative opportunities and laid the foundation for a bright future with the adoption this past summer of a new 2022–2027 strategic plan.

This plan places a great deal of emphasis on addressing current and future major issues in transportation. The Executive Committee adopted a new Diversity, Equity, and Inclusion Strategic Plan, as well as a new International Activities Strategic Plan. These plans further our resolve to lead in addressing equity and strengthen our collaboration with our international colleagues. We want to recognize the leadership and membership of the Special Committee on Diversity, Equity, and Inclusion and the International Activities Subcommittee for their hard work and dedication.

More than 7,500 attendees joined us for the 2022 TRB Annual Meeting, where colleagues reconnected, shared ideas, and addressed common goals. U.S. Secretary of Transportation Pete Buttigieg addressed attendees in a keynote speech; the recording has been viewed by more than 6,500 people since the live address. Many committee meetings were streamed from meeting rooms to increase inclusion and provide another option for those who could not attend in person. Anne Strauss-Wieder, Director of Freight Planning at the North Jersey Transportation Planning Authority, presented the 2022 Thomas B. Deen Distinguished Lectureship with a focus on shifting supply chains and freight systems. Her lecture also was recorded and has since been viewed more than 1,800 times.

This past year, TRB's 177 standing technical committees continued to address current and emerging issues within their scopes, including critical topics in transportation along with concerns specific to various parts of the industry.

"It has been an honor and privilege to serve as TRB Executive Director for the past eight years. I want to thank all of the TRB sponsors, volunteers, and staff for all that they have done for the board and for their support during the time that I have been Executive Director. Congratulations to Victoria Sheehan! TRB is in good hands under Victoria's leadership."

—Neil Pedersen, TRB Executive Director, 2015–2022

These committees helped TRB host 11 specialty conferences and cosponsor more than 20 others during 2022, including several that were postponed from 2020 and 2021. In addition, we hosted more than 60 webinars this year.

TRB's multimodal Cooperative Research Programs (CRP) continued unabated throughout 2022, with more than 150 publications issued on subjects that range from specific technical topics to broader policy issues. TRB also issued consensus study reports that offered impactful advice to the federal government and others on important policy issues.

This annual report is organized around—and provides information on—progress made in the following major functions of TRB:

1. Convening,
2. Research,
3. Advising and Informing, and
4. Communicating.

TRB accomplished a great deal in each of these areas during 2022. Ingrained in each section of this report is an emphasis on furthering our workforce, as well as improving diversity, equity, and inclusion among the transportation workforce and in society. Serving people and improving the human condition is at the heart of what we do.

As TRB envisions 2023 and beyond, we look forward to continuing the exchange of ideas, sharing best practices, advancing research, and collaborating on transportation-related challenges. No matter the format, TRB will continue to provide leadership to find solutions that address complex transportation-related problems facing society and to share these strategies widely.

TRB's leadership will also undergo a change with the retirement of Neil Pedersen, who has served honorably as the Executive Director. TRB is in a better and stronger place due to Neil's passion and dedication all these years, and for that we owe him a debt of gratitude. After a national search, the National Academies announced that Victoria Sheehan has joined the organization as TRB's new Executive Director. Victoria comes to TRB from the New Hampshire Department of Transportation,

New TRB Executive Director Victoria Sheehan chats with Maryland Governor Larry Hogan at the AASHTO 2020 Washington Briefing in Washington, DC.

AASHTO

Nathaniel P. Ford, Sr.
TRB Executive Committee Chair
Chief Executive Officer of the Jacksonville Transportation Authority

Shawn Wilson
TRB Executive Committee Vice Chair
Secretary of the Louisiana Department of Transportation and Development

Neil Pedersen
TRB Executive Director, 2015–2022

Victoria Sheehan
TRB Executive Director, 2022–

where she was Commissioner for the past seven years. She brings technical expertise and a collaborative leadership approach to the position that will serve TRB and its membership. We are confident that TRB's sponsors, volunteers, customers, and staff will all benefit from Victoria's leadership.

As we begin a new year, we hope that you will actively participate in TRB's convening, research, and advising activities; take advantage of the numerous resources that TRB makes available to the transportation professional community; and learn from the brightest and best who make TRB the world's premier transportation research organization. By doing so, you will have the opportunity to contribute to solving some of the most complex transportation-related challenges facing the nation and the world.

The need for active leadership and participation from TRB's volunteers has never been greater. That work is critical as TRB continues to adapt to the rapid changes taking place in transportation and in society to ensure that we rise to the challenge. We are all TRB, and we all must work together to provide leadership to create a better future. We look forward to having you join us on this journey.

Thank you for all that you do for TRB!

—Nathaniel P. Ford, Sr., Chair, and Shawn Wilson, Vice Chair
TRB Executive Committee

TRB'S MISSION AND WORK

Strengthening Our Capacity to Contribute to the Well-Being of Our Nation and the World

Resilience and change are concepts to which we have all become more accustomed since 2020. TRB has led the way by exploring new, emerging, and critical issues in transportation. As part of the National Academies of Sciences, Engineering, and Medicine, TRB provides leadership in transportation improvements and innovation through trusted, timely, impartial, and evidence-based information exchange, research, and advice regarding all modes of transportation. Over the past year, the TRB Executive Committee approved a new TRB Strategic Plan for 2022–2027, a new TRB Diversity, Equity, and Inclusion Strategic Plan, and a new TRB International Activities Strategic Plan for 2022-2027. TRB's mission is to mobilize expertise, experience, and knowledge to anticipate and solve complex transportation-related challenges.

As a program division of the National Academies, TRB provides independent, objective advice to inform policy with evidence, spark progress and innovation, and confront challenging issues for the benefit of society. These challenges require ingenuity, research and evidence, and collaboration across many disciplines and areas of expertise. TRB and the National Academies are working in service to the nation and the world to advance solutions for a brighter future.

Mobilizing Expertise, Experience, and Knowledge

With TRB's updated strategic plan comes an updated mission that is aligned with the future of transportation and the organization. TRB mobilizes expertise, experience, and

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U.S. Army Corps of Engineers

TRB's commitment to social equity and justice was noted last February in a Planetizen Institute of Transportation Engineers Quickbite.

Russell Houston
TRB Associate Executive Director

Ann Brach
Director, TRB Technical Activities Division

Avery Grimes
Chair, Technical Activities Council

Gary Walker
Senior Deputy Director, TRB Program Finance

Christopher J. Hedges
Director, TRB Cooperative Research Programs

knowledge to anticipate and solve complex transportation-related challenges. New guiding tenants help focus the mission into goals. TRB aims to leverage the expertise available as part of the National Academies, as well as to adhere to high standards for objectivity, independence, nonpartisanship, integrity, and excellence—all based in evidence.

Looking to the world at large, TRB enables society to benefit from the multidisciplinary and multimodal scope of its portfolio and the expertise and contributions of those involved in the organization's work.

TRB's sponsors, affiliates, and professionals working in transportation-related fields have access to relevant services and useful, high-quality products. TRB facilitates the professional development and growth opportunities for transportation professionals at all stages of their careers, including students. Its work leverages diversity of thought, background, perspective, and experience to better address transportation's challenges; identify and eliminate barriers to full and active inclusion in TRB; and develop a diverse set of TRB volunteer leaders.

Mobilizing on a Grand Scale

In addition to about 7,500 attendees at the 2022 TRB Annual Meeting, TRB brought together thousands of volunteers through standing committees, project panels, consensus study committees, forums, conferences, workshops, meetings, and webinars throughout the year. The TRB Annual Meeting remains the leading annual event for transportation researchers and professionals to access and share the latest in transportation research.

In 2022, nearly 5,000 individuals served on TRB's standing technical committees. In addition, more than 18,300 volunteers contributed to committee activities as friends of committees. TRB's Technical Activities Division convenes these committees, overseeing and managing the committees' activities in support of TRB's mission and strategic goals. Ann Brach is Director of the division, and Avery

Grimes of Patriot Rail Company serves as the volunteer Chair of the Technical Activities Council.

TRB manages research programs focusing on highways, public transit, airports, and behavioral traffic safety through its Cooperative Research Programs (CRP) Division, which has a total budget in excess of $62 million. Contractors conduct the actual research, and more than 3,200 volunteers serve on CRP oversight committees and project panels. Christopher J. Hedges is Director of this division. Waseem Dekelbab is Deputy Director of the division and Manager of the National Cooperative Highway Research Program (NCHRP). Gwen Chisholm-Smith is Manager of the Transit Cooperative Research Program (TCRP). Marci A. Greenberger is Manager of the Airport Cooperative Research Program (ACRP). Natalie Barnes is the Publications Director for the division. The following TRB volunteers lead the oversight committees for each program:

- Joel Jundt of the South Dakota Department of Transportation (DOT) is Chair of the AASHTO Special Committee on Research and Innovation, which is the oversight committee for NCHRP.
- Rhonda Hamm-Niebruegge of St. Louis Lambert International Airport is Chair of the ACRP Oversight Committee.

- Doran Barnes of Foothill Transit is Chair of the TCRP Oversight and Project Selection Commission.
- Mark Ezzell of the North Carolina Governor's Highway Safety Program is Chair of the Governors Highway Safety Association Research Committee, which is the oversight committee for the Behavioral Traffic Safety Cooperative Research Program (BTSCRP).

Joel Jundt
Chair, AASHTO Special Committee on Research and Innovation

Rhonda Hamm-Niebruegge
Chair, ACRP Oversight Committee

Doran Barnes
Chair, TCRP Oversight and Project Selection Commission

Mark Ezzell
Chair, Governors Highway Safety Association Research Committee

TRB consensus reports are the result of research performed by committees of volunteer experts supported by staff from the Consensus and Advisory Studies Division. Scores of TRB consensus reports have contributed to changes in legislation in the United States and, in 2022, approximately 200 volunteers served on committees for this program. Tom Menzies is Director of this division, and Susan Shaheen of the University of California, Berkeley, is the TRB volunteer Chair of the Subcommittee on Planning and Policy Review, which is the oversight committee for the Consensus and Advisory Studies Division.

Either in response to requests from sponsoring agencies or on its own initiative, TRB's internationally recognized Marine Board identifies research needs and provides a forum for the exchange of information on new technologies, laws and regulations, economics, the environment, and issues affecting the marine transportation system; port operations; coastal engineering; and marine governance. Craig Philip, National Academy of Engineering member, Research Professor of Civil and Environmental Engineering, Director of the Vanderbilt Center for Transportation and Operational Resiliency (VECTOR), and former CEO of Ingram Barge Company began his two-year term as Marine Board Chair in November 2022. Scott Brotemarkle of TRB's Technical

Washington State DOT

Tom Menzies
Director, TRB Consensus and Advisory Studies

Susan Shaheen
Chair, Subcommittee on Planning and Policy Review

Craig Philip
Chair, Marine Board

Patrice Davenport
Director, TRB Strategic Program Development

Activities Division serves as the Marine Board's Program Director.

In addition to Consensus reports and CRP publications, TRB produces a journal and a magazine. The *Transportation Research Record,* TRB's journal, publishes nearly 800 peer-reviewed papers yearly. Patti Lockhart is the Director of Publishing and Outreach and the Managing Editor.

TR News, TRB's bimonthly magazine, features timely articles on new and state-of-the-art research and practice, transportation news, profiles of transportation professionals, new book notices, and news of TRB activities. Articles in 2022 focused on a range of transportation issues—from trafficking that results in missing and murdered indigenous women to decarbonizing transportation. Christine Gerencher is Chair of the *TR News* Editorial Board, and Cassandra Franklin-Barbajosa is the magazine's Senior Editor.

Growing Transportation Careers at All Levels

Informal mentoring happens all the time in TRB. Whether through a first job or experiences as seasoned experts, TRB connects professionals to colleagues within their industry, as well as those in the bigger picture of transportation.

Following the success of the virtual Careers in Motion Networking Fair in 2021, TRB held this event again in 2022. More than 300 candidates and two dozen employers from around the country interacted. This fair kicked off a month-long series of professional development challenges geared at helping young professionals cultivate enhanced networking and leadership skills. During February, weekly posts on TRB's social media and in *TRB Weekly* generated thousands of views consisting of activities for young professionals looking to step up their career development.

Throughout the year, TRB's Careers in Motion Job Center received an average of 7,000 new job posting views per month, offering a streamlined service to connect candidates and employers. While jobseekers received access to transportation industry employment opportunities and career coaching services, employers posted more than 500 jobs and gained access to a database of professional transportation candidates. Patrice Davenport, Director of Strategic Program Development, leads these TRB workforce–focused initiatives. Jobseekers gain access to employment opportunities posted by TRB sponsors and affiliates, who receive year-round complimentary job postings as part of their core program support.

North Carolina DOT

Summer intern Dominique Parrish controls a drone as fellow intern Blane Winston (right) listens and learns. Both are guided by North Carolina Department of Transportation Aviation Department team Tyler Clowes (left) and Evan Arnold (seated).

CONVENING

Risdon Photography

U.S. Transportation Secretary Pete Buttigieg addresses attendees at the 2022 TRB Annual Meeting.

Gathering Face-to-Face and Webcam-to-Webcam

In January 2022, the TRB Annual Meeting, which thousands in the field of transportation research look forward to, resumed in person. It is a unique opportunity for policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions to meet and address all things transportation. The program covers all transportation modes and nearly every imaginable relevant subject related to transportation.

TRB and the National Academies stake their reputations on impartial and rigorous scientific research. The step of sharing that information with audiences who need it and can put it into action is equally important.

Survey results after 2021's virtual TRB Annual Meeting showed that attendees valued the face-to-face format over an online option. After determining that a fully hybrid event—one held in person and fully accessible remotely—was logistically and financially infeasible, TRB staff spent months researching the safest ways to hold in-person events, consulting public health experts and other organizations that run large meetings, and

Risdon Photography

"Despite the challenges related to COVID-19, TRB functioned well, provided great content, and made me feel safe while attending. Well planned!"

—Consultant from Tallahassee, Florida, and first-time TRB Annual Meeting attendee

basing decisions on the best available data and experience. A rigorous COVID-19 countermeasure plan was developed, reviewed, and updated right up to the days of the event. Numerous actions were taken to reduce the risk of COVID-19 exposure, including proof of vaccination, required masking, layouts that afforded more room for social distancing, and removal of several traditional but nonessential events that tended to be more crowded. Approximately half of the 400 committee and subcommittee meetings provided remote access, and high-profile sessions were recorded and posted online for those who could not attend in person. Events proceeded with flexibility to accommodate new formats.

In addition to the Annual Meeting, TRB—through conferences and workshops—brought together outstanding speakers and experts to share ideas on some of the most complex issues facing the transportation industry:

- Sessions at the Sustainability and Emerging Transportation Technology (SETT) Conference addressed ways that policy makers, the private sector, and others can work together to support transportation innovations that promote sustainability and benefit all users of the transportation system, particularly in terms of public health, equity, and accessibility.
- The Automated Road Transportation Symposium (ARTS) included panelists who represented a wide variety of private industries, as well as academia, government, and research. Topics included safety, business development, roadway operations, public acceptance, and legislative and regulatory affairs, all of which spanned local, federal, and international spheres.
- TRB's Conference on Scenario Planning in Transportation created a space for conversations around the challenges associated with embracing the process. Scenario planning has obvious future potential in preparing agencies' organization and operational responses to the unexpected, such as increasingly common extreme weather events or global health emergencies.
- Combining two long-standing conferences

on inclusive and accessible transportation, the TRANSED: Mobility, Accessibility, and Demand Response Transportation Conference addressed the need to better connect the transportation analyses conducted by academia and agencies to conditions on the ground for providers of sustainable and accessible mobility solutions.

Focusing on Deeper Discussions

Additionally, a few events with more limited audiences took place at the National Academies buildings to drive collaboration further. The Transit Cooperative Research Program (TCRP) and Airport Cooperative Research Program (ACRP) each hosted Insight Events focused on specific areas affecting their respective industries.

TCRP took a closer look at air quality and communicable disease—specifically in buses—by virtually bringing together transit industry leaders, subject-matter experts, and other thought leaders. Stakeholders shared their knowledge to help identify possible solutions to the problems, as well as areas of research to be undertaken in future TCRP projects.

ACRP took a wide-lens look at the mid-term future (2035) and long-term (2060 and beyond) trends in the aviation industry. Attendees also discussed promoting collaboration, fostering innovation, and helping to identify areas of future research. In a separate event, the program connected various experts to discuss the challenges posed by systemic racism in the aviation industry, why it matters, actions that can be taken collectively to create solutions, and future research ideas for ACRP on this subject.

Summaries of the TCRP and ACRP Insight Events will be published in the new Transportation Insights series.

Learning from the Experts Firsthand

Every year, TRB offers professional development to thousands of researchers, practitioners, and transportation professionals through an extensive webinar program. TRB webinars have a loyal following in the workforce. Nearly 100 credit hours were offered via professional development accreditation services across TRB's more than 60 total webinars this year. When multiplied across attendees, TRB awarded up to 25,000 accreditation hours through its agreements with the Registered Continuing Education Program for professional engineers, the American Planning Association for certified planners, the American Association of Airport Executives, and the American Bar Association. More than 90 percent of attendees join regularly, and the satisfaction rate remains above 90 percent. Approximately 3,000 state DOT employees attended webinars in 2021. New York, North Carolina, and Wisconsin DOT employees lead the pack in taking advantage of the courses available at no charge to TRB sponsors.

TRB's webinar program has been at the forefront of virtual connections for more than 10 years. Most webinars are based on research published by TRB. More than 250 volunteers shared their knowledge through presentations to more than 6,000 webinar registrants in 2022. Each webinar offers a question-and-answer session, allowing real-time opportunity to connect and learn from the exchange.

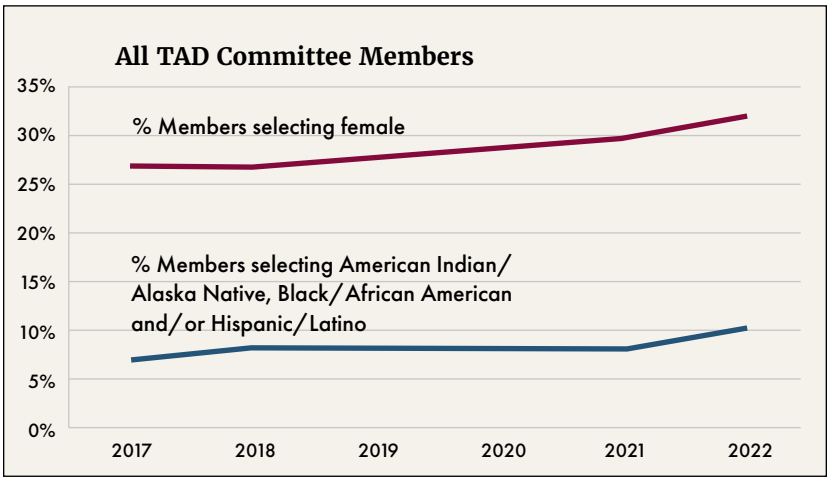
Top Five Most Attended TRB Webinars

1. Temporary Pavement Markings and Removal Practices in Workzones (382 attendees)
2. Pedestrian Analysis—Current Practice, Resources, and Applications (358 attendees)
3. Transportation in an Aging Society—The Future Is Now (339 attendees)
4. What's New in the HCM7 and Why It Matters (338 attendees)
5. Transportation Planning and Project Development Quality-of-Life Practices (334 attendees)

Collaborating on Future Technology and Policy

To share perspectives on all of the biggest issues surrounding automated vehicles and shared mobility, TRB offers the Forum on Preparing for Automated Vehicles and Shared Mobility Systems. Long-term goals of

Committee Diversity



the program are increasing safety, reducing congestion, enhancing accessibility, increasing environmental and energy sustainability, and encouraging economic development and equity. A July meeting of the Forum—including representatives from the European Union—was held in coordination with ARTS. Participants discussed the potential for twinning and partnering projects.

Finding Solutions for State Agencies

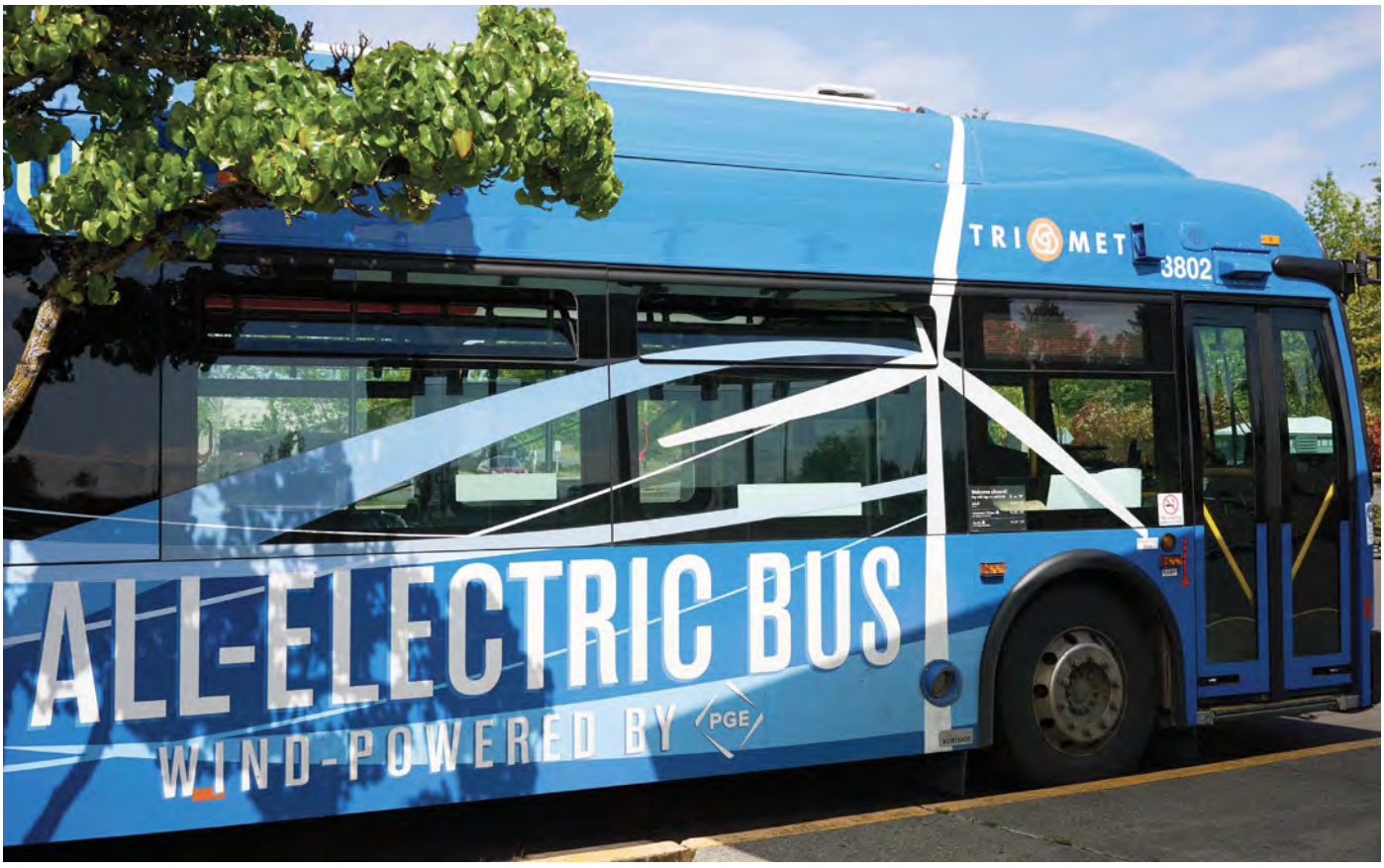
TRB's State Partnership Program is a joint effort between TRB and state DOTs. TRB has been visiting state DOTs since the 1940s. Virtual group visits in 2022 allowed a focus on specific topics while continuing to be accessible to as many participants as possible. This year's visits focused on how state DOT employees can take advantage of participation in TRB, including in such areas as resiliency and climate change; infrastructure; transformative technologies; workforce issues; safety; and diversity, equity, and inclusion. All state DOTs had the option to participate in virtual group visits this year, and most chose to take the opportunity.

Including More Diverse Voices

The transportation industry is complex and is composed of a wide range of actors. TRB partners with other organizations to ensure its advice, research, and collaboration are equitable and include all voices.

TRB volunteers lead the conversations that the transportation industry has around critical issues. The community recognizes the value in having representation from all stakeholders. Staff and standing technical committee members have worked hard to help diversify the makeup and leadership of these committees over the long term. In 2022, the number of new committee chairs who self-identify as female went from nearly 30 percent to more than 50 percent in the course of a year. The number of committee chairs who self-identify as American Indian/Alaska Native, Black/African American, and Hispanic/Latino rose from just over 8 percent in 2017 to approximately 10 percent in 2022.

RESEARCH



By conducting, sharing, and promoting research, TRB creates and expands access to knowledge on current and future issues in transportation.

TRB's most engaging publications in 2022 show the industry's commitment to the critical issues of climate resiliency and sustainability, public health, safety, equity, and economic opportunity.

Climate Resiliency and Sustainability

The technology behind electric vehicles is increasingly being placed into production. Aircraft are becoming electric. Design innovation for electrically powered and hybrid electric aircraft is accelerating rapidly. Employees at Alaska's transportation department, FAA, and NASA are all looking to the future, as indicated by the 1,000 downloads of *ACRP Research Report 236: Preparing Your Airport for Electric Aircraft and Hydrogen Technologies.*

When it comes to transitioning to greener transportation, "states are all over the map," says Jonathan Rubin. "Some states are way ahead, and some are way behind. States have to take an honest appraisal of where they

Most Downloaded CRP Publications Published in 2022

1. *Traffic Signal Control Strategies for Pedestrians and Bicyclists*
2. *Recent Decline in Public Transportation Ridership: Analysis, Causes, and Responses*
3. *Highway Safety Manual User Guide*
4. *Preparing Your Airport for Electric Aircraft and Hydrogen Technologies*
5. *Metropolitan Planning Organizations: Strategies for Future Success*
6. *Subsurface Drainage Practices in Pavement Design, Construction, and Maintenance*
7. *Integrating Effective Transportation Performance, Risk, and Asset Management Practices*
8. *Coordination of Public Transit Services and Investments with Affordable Housing Policies*
9. *Transit Safety Risk Assessment Methodologies*
10. *Bus Rapid Transit: Current State of Practice*

are." Rubin is a University of Maine professor of economics, director of the Margaret Chase Policy Center, and a member of the panel for the NCHRP project that developed *NCHRP WebResource 1: Reducing Greenhouse Gas Emissions* and *NCHRP Web-Only Document 308: Methods for State DOTs to Reduce Greenhouse Gas Emissions from the Transportation Sector*. Since the online document's publication, staff from California and New York's DOTs, as well as the U.S. Department of Transportation (U.S. DOT), have downloaded it more than 850 times.

Public Health

The most common approach that state DOT employees use to address highway traffic noise—a public health concern in a number of communities—is usually noise walls. But the solutions are not one size fits all. Some communities may want reduced highway traffic noise but oppose a wall. Others may advocate for a barrier, although topography and other conditions mean that a barrier will provide little reduction in noise. California, New Jersey, Texas, and Virginia DOT staff are downloading *NCHRP Research Report 984: Breaking Barriers—Alternative Approaches to Avoiding and Reducing Highway Traffic Noise Impacts* to help identify which of the innovative strategies included may be appropriate for specific highway projects.

Safety

In the United States, traffic signal timing is traditionally developed to minimize motor vehicle delay at signalized intersections. The unintended consequence is often diminished safety and mobility for pedestrians and bicyclists. *NCHRP Research Report 969: Traffic Signal Control Strategies for Pedestrians and Bicyclists* provides tools, performance measures, and policy information to help practitioners design and operate signalized intersections in a way that improves safety and service—whether commuters are on their feet or on two or more wheels. With approximately 2,000 downloads, people are paying attention.

Trespassers accessing rail transit and commuter rail restricted areas are at risk of being struck, severely hurt, or fatally injured. From 2015 to 2019, there were 77 pedestrian fatalities and 1,888 pedestrian injuries involving light and heavy rail systems. *TCRP Research Report 233: Strategies for Deterring Trespassing on Rail Transit and Commuter Rail Rights-of-Way, Volume 1, Guidebook* catalogs proven trespasser prevention strategies, from design through planning and implementation. Cook County, Illinois, staff and the California Public Utilities

"Now more than ever, we need to deepen our understanding of the potential of new transportation technologies and management strategies to decarbonize mobility. Sustainability research presented at the TRB Annual Meeting and discussions initiated there are leading the way toward uncovering novel solutions to environmental-friendly transportation systems."

—Ria Kontou, Assistant Professor at the University of Illinois, Urbana–Champaign and Chair, TRB Young Members Coordinating Council (ex officio)

Commission workforce are among the report's 750 downloaders.

NCHRP has a long history of research supporting industry-standard resources. *NCHRP Web-Only Document 323: Highway Safety Manual User Guide* is an example of a user-friendly companion document with more than 1,000 downloads in its first year. Researchers and practitioners can make use of this resource to better identify strategies with the most potential for reduction in crash frequency or severity and mitigation measures.

Equity

Equity in accessibility has been a cornerstone of TRB research over the past few years. Publications in 2022 have followed suit. Late in the year, the first volume of *TCRP Research Report 236: Racial Equity, Black America, and Public Transportation* was released. The volume summarizes common practices of the 20th and 21st centuries that had significant economic, health, and social impacts and the racial gaps that emerged as a result of transportation inequities, deliberate actions, policies, and projects. Look for more information about this report's subsequent volumes in the ***2023 and the Future*** section of this report.

Employees from the U.S. Department of Housing and Urban Development are among the nearly 900 who downloaded *TCRP Synthesis 162: Coordination of Public Transit Services and Investments with Affordable Housing Policies*. The report highlights informative case examples that explore not only the ways transit agencies are coordinating with affordable housing initiatives, but also ways regional planning agencies, local governments, and affordable housing partners are helping to bridge their individual tasks to realize the full potential of each.

Building on a nearly 20-year-old TCRP snapshot of transit agency initiatives, *TCRP Research Report 228: Resource Guide for Improving Diversity and Inclusion Programs for the Public Transportation Industry* covers evolving diversity programs; how inclusion has been incorporated; and what policies, plans, and practices have been successfully implemented within the industry. The report has been downloaded nearly 1,300 times, including by those at the Port Authority of New York and New Jersey.

Economic Opportunity

Connecting people with economic opportunity—either to work, shop, or network—is one of transportation's major goals. Practitioners and planners in King County, Washington, and in Connecticut may have a vested interest in using bus rapid transit systems to improve the reliability of bus service, travel time, operation efficiency, and customer satisfaction, as they are among the more than 850 downloaders of *TCRP Synthesis 164: Bus Rapid Transit—Current State of Practice*.

Air service supports business and employment throughout a given region. *ACRP Web-Only Document 53: Measuring and Understanding the Relationship Between Air Service and Regional Economic Development* and *ACRP WebResource 12: Air Service Development and Regional Economic Activity* provide the information and tools necessary to understand and communicate the nexus between air service and regional employment. Downloaders are located across the globe, from Canada to India.

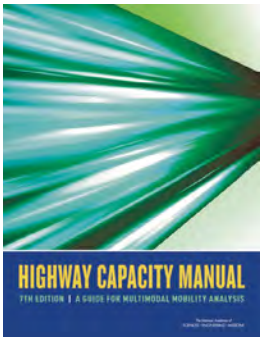
Decades of Research Behind Transportation Engineering

Transportation engineers can update safety and planning work with the latest version of a fundamental reference, *Highway Capacity Manual, 7th Edition: A Guide for Multimodal Mobility Analysis* (HCM7). These professionals have used versions of the HCM as part of their studies in analysis techniques for seven decades.

HCM7 contains new planning-level methods for connected and automated vehicles; a completely revised procedure for analyzing two-lane highways; a new procedure for evaluating systems of freeways and arterials with queue spillback; and updated methodologies for pedestrian operations—including at signals and on urban streets—throughout the manual.

TRB volunteer and University of Florida Transportation Institute Director Lily Elefteriadou contributed to the manual. She shared her excitement about the updates, noting that transportation engineers can now analyze an entire network of freeways and arterial roads seamlessly for the first time. Her brief remarks have been watched nearly 4,000 times online.

HCM7 serves as a fundamental reference on



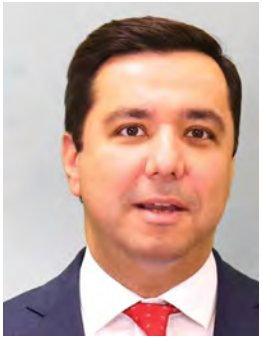
Samantha Schaffer, U.S. Air Force

concepts, performance measures, and analysis techniques for evaluating the multimodal operation of streets, highways, freeways, and off-street pathways.

TRB continues to develop and maintain the Transportation Research Information Services (TRIS) databases, including Transport Research International Documentation (TRID) and the Transportation Research Thesaurus. TRID is the world's largest, most comprehensive bibliographic resource on published and ongoing transportation research, with more than 1.4 million records containing more than 420,000 links to free or fee-based full text. TRID includes datasets and technical reports from state and federal DOTs; projects on ongoing, recently completed, or soon-to-begin research from TRB's Research in Progress Database; and comprehensive coverage of peer-reviewed transportation journals.

Paving the Way for a Diverse, Equitable, and Inclusive Workforce

Technology can be a tool to advance jobs and complement employees. The fledgling state of transit vehicle automation and a significant amount of uncertainty about how and when automated transit services become more prevalent make *TCRP Research Report 232: The Impacts of Vehicle Automation on the Public Transportation Workforce* particularly timely. The report looks at job impacts for operators,



"With new methods to plan and design better pedestrian treatment in HCM7, I envision a great boost in HCM's usage for true multimodal analyses. The multimodal aspect of mobility analyses will improve our transportation infrastructure to be more equitable for all users. These new applications will pave the way to properly address safety and environmental issues and challenges."

—Behzad Aghdashi, Director of the McTrans Center at the University of Florida

"This year, I witnessed the transformation of two excellent undergraduate students who completed and submitted their research under the example and guidance of senior PhD researchers in two extremely important topics: Native American resilience against post-wildfire flooding following the 2022 fires in New Mexico, and human–robotic interfaces for highway maintenance in mountainous roads. Tim is a midshipman ROTC student, and Eric is in the Air Force. They are both excited about the upcoming TRB Annual Meeting in general, but in particular, attending the [meetings of the] Standing Committee on Transportation for National Defense. I can't wait to see their involvement grow building up to the January meeting."

—Fernando Moreu, Associate Professor at the University of New Mexico and TRB Minority Student Fellow Program Mentor for Timothy Thiergart and Eric Olaguir

Risdon Photography

Texas Southern University student Valencia Stewart takes part in the Minority Student Fellows orientation at the 2022 TRB Annual Meeting.

dispatchers, traffic controllers, mechanics and maintenance technicians, and bus service personnel. It also takes a close look at those currently in these roles and the greater implications for society.

The Minority Student Fellows Program welcomed another outstanding class to the 2022 TRB Annual Meeting. While attending the meeting, the 20 student fellows representing 15 minority-serving institutions presented self-authored research papers. Karen Febey, TRB Senior Report Review Officer, manages the program.

Graduate-level aviation students present and publish work in the *Transportation Research Record* through close work with advisors in the ACRP Graduate Research Awards Program.

Undergraduate students are eligible for ACRP's University Design Competition. The competition encourages innovative, yet practical solutions for challenges facing airports in four categories: airport environmental interactions; airport operations and maintenance; airport management and planning; and runway safety/runway incursions/runway excursions including aprons, ramps, and taxiways. The 2022 winners and faculty advisers received their awards in July at the National Academies main building in Washington, DC.

Karen Febey
TRB Senior Report Review Officer

ADVISING AND INFORMING

Appointed by the President of the National Academy of Sciences, TRB expert study committees provide formal recommendations to the federal government through consensus studies and also provide strategic advice to U.S. DOT modal agencies on their research and technology programs. Furthermore, other TRB activities—including workshops and research reports—can be valuable sources of information for policy discussions at all levels of government.

TRB research is particularly focused on innovative and implementable practices and technologies. *COVID-19 Addendum to Critical Issues in Transportation* and *Racial Equity Addendum to Critical Issues in Transportation* have each been downloaded about 1,500 times over the past year. At the same time, TRB continues to administer research into the day-to-day issues facing transportation agencies, including understanding emissions, network design, and traffic interchanges.

Convening to Advise

Upon request, National Academies–appointed consensus study committees advise Congress, executive branch agencies, the states, and other organizations on an array of complex and often controversial transportation topics of national significance. Committee members are selected to provide appropriate expertise and a balance of perspectives on the issues involved. Through such special expert committees, TRB also conducts periodic or continuing reviews

of specific transportation research and technology programs. Consensus study committee activities are subject to the requirements of Section 15 of FACA (the Federal Advisory Committee Act) amendments of 1997.

Consensus Study Committees

TRB conducts advisory studies in accordance with procedures of the National Academies. Congress or executive branch agencies request most studies, while others are funded by states, other organizations, or are self-funded by TRB. Committees of volunteer experts supported by staff from TRB's Consensus and Advisory Studies Division conduct these studies.

Formal policy advice comes through TRB's consensus studies. Each study committee produces a report with evidence-based conclusions and recommendations that are subject to the National Academies' rigorous report review process.

Committee Chair Joseph L. Schofer and other committee members led two days of presentations and discussions on transportation resilience metrics. Informed by the findings in *TRB Special Report 340: Investing in Transportation Resilience—A Framework for Informed Choices,* representatives of federal, state, and local transportation and planning agencies joined private-sector staff and academics to explore ways to carry out the recommendations in the report. Published in 2021, the report was downloaded approximately 1,800 times that year, a number that almost doubled in 2022.

Researched Recommendations

Commercial aviation safety in the United States has improved more than 40-fold over the past several decades, according to industry statistics. But it will be important to monitor for changing hazards, such as those that may arise from climate change; increasingly complex systems; changing workforce; and new players, business models, and technologies. *Emerging Hazards in Commercial Aviation—Report 1: Initial Assessment of Safety Data and Analysis Processes* has already been downloaded nearly 1,000 times since its August release. It is the first in a series of six reports that will be issued over the next 10 years on commercial aviation safety trends in the United States. Look for upcoming events and meetings leading to future reports.

The country's increased production of crude oil and natural gas can provide economic benefits to the United States but also creates new demands and safety challenges for their transportation. As U.S. natural gas production has grown markedly over the past decade, liquefied natural gas (LNG) is being exported in larger quantities to customers overseas. However, to date, very little LNG has been transported by rail to export facilities and other users. The committee that authored 2022's *Preparing for LNG by Rail Tank Car: A Readiness Review* recommended that the new tank car design specification for LNG shipments be investigated further to ascertain its likely safety performance in a derailment and fully account for LNG's distinctive cryogenic and flammability properties.

The offshore oil and gas industry is characterized by diverse and complex operations with many hazards that need to be controlled. In early 2023, a TRB consensus project is expected to provide an assessment of the changing risk profile of offshore oil and gas operations in the Gulf of Mexico. The committee assessed the progress that has been made in addressing and decreasing the systemic risks of offshore operations since the tragic Macondo field drilling rig explosion and well release of 2010.

The Workforce Translates Findings into Real World Results

The owner of a new company that provides passenger service on amphibious boats says he benefited from the advice and analysis in a 2021 TRB consensus report, according to FOX Station KOLR in the Ozarks. Canopies installed on a DUKW boat, a type of amphibious vessel, were found by the National Transportation Safety Board to have trapped passengers underwater during a fatal boat accident on Table Rock Lake in Missouri in 2018. However, in deciding whether to install canopies on his Hydra-Terra amphibious boats, which differ from DUKW boats, owner Richard Corby consulted *TRB Special Report 342: Options for Improving the Safety of DUKW Type Amphibious Vessels* to determine that the reserve buoyancy on the company's boats would be sufficient to

negate concerns about whether the canopies were a safety hazard.

In 2022, the University of North Dakota became the largest public flight school in the United States to fully switch to unleaded aviation gas (or avgas). The CEO of the fuel company that supplies the university with the unleaded avgas lauded Kimberly Kenville, a TRB volunteer and University of North Dakota aviation professor. Kenville has been working with others in the aviation industry to find cleaner fuels, following her service on the TRB committee that issued the report *TRB Special Report 336: Options for Reducing Lead Emissions from Piston-Engine Aircraft.*

Committees That Advise on U.S. DOT Research

TRB's Committee for the Review of Federal Highway Administration's Long-Term Infrastructure Research and Development Program (LTIP) is charged with advising the agency on its priorities and progress in providing the technical tools and products state DOTs need to maintain and improve the performance of their pavements and bridges. The LTIP committee has recommended the formation of a forum of experts to identify and set priorities for long-term pavement performance data analysis and for FHWA to develop a revised plan for the collection of nondestructive evaluation data on bridge deck condition.

The Research and Technology Coordinating Committee, which advises FHWA on its research, development, and technology program, issued a report commenting on FHWA's Complete Streets Program and additional research needed associated with this program.

Diversity and Equity Behind Recommendations and Policy

The 2022 TRB Annual Meeting featured nearly 30 sessions based on research around issues of equity. Robert Hampshire, U.S. DOT Deputy Assistant Secretary for Research and Technology, led a conversation on *Innovation for Transformation: Safety, Economic Strength, Equity, and Climate.* A video of the session featured representatives from various offices within U.S. DOT, along with Nuria Fernandez, Federal Transit Administrator and ex officio member of TRB's Executive Committee.

The National Academies value diversity in our members, volunteers, and staff and strive for a culture of inclusion in our workplace and activities. Convening a diverse community of professional expertise to exchange ideas and perspectives enhances the quality of our work and increases our relevance as advisers to the nation about the most complex issues facing the United States and the world.

Selection of appropriate committee members for TRB's consensus studies—individually and collectively—is essential for the success of a study. As with all National Academies advisory projects, committee members serve as individual experts, not as representatives of organizations or interest groups. Committee composition is representative, independent, and balanced. Resources for volunteers clarify roles and the importance of inclusivity in the process.

Risdon Photography

Robert Hampshire, U.S. DOT Deputy Assistant Secretary for Research and Technology and TRB Executive Committee ex officio member, leads a discussion on *Innovations for Transformation: Safety, Economic Strength, Equity, and Climate* at the 2022 TRB Annual Meeting.

COMMUNICATING

TRB staff continue to work toward implementation of the Strategic Communications Plan approved by TRB's Executive Committee in 2021. A social media strategy was added as an appendix to the document in 2022. Increased collaboration with the National Academies Office of the Chief Communications Officer also allowed for improved gathering and analysis of online statistics, incorporating this understanding into how we reach TRB's audiences. Paul Mackie is the Director of Communications/Media.

People also may notice a change to many of TRB's documents, signs, and presentations, as the National Academies launched a new look in its branding in 2022. TRB also has enhanced its documented crisis communications strategy for the TRB Annual Meeting to increase our preparedness should unexpected crises arise.

TRB's revamped digital newsletter, *TRB Weekly*, continues to amass subscribers with approximately 18,000 people receiving it each week. Engagement with the newsletter is well above the industry average, with links in *TRB Weekly* clicked more than three times as often as similar email newsletters in the industry. Subscribers continuously reevaluate their subscription categories, ensuring that they get the exact mix of news they are seeking.

In addition to *TRB Weekly*, three

Paul Mackie
Director, Communications/Media

mode-specific CRP listservs—applications that distribute messages to subscribers on an electronic mailing list—deliver announcements of new projects, calls for nominations and problem statements, and requests for proposals as they arise. TRB volunteers receiving these messages often take the lead for further spreading the message to university transportation centers, professional groups, consultancies, or the state DOTs they represent.

The *Upcoming TRB Webinars* weekly newsletter reaches 32,000 subscribers, who opt to select topics and are only notified when webinars with their chosen topics are available. On average, the enrollment rate for webinars jumps more than 480 percent after these emails go out.

TRBAM Express, the newsletter for registrants at TRB's Annual Meeting, took off in 2022. The eight-issue newsletter is a benefit for all registered attendees. Updates to the schedule, technical advice for accessing the online presentations, and social media coverage were some of the more engaging items.

Increase Awareness of TRB Products, Activities, and Services

Word-of-mouth communications by the volunteers on TRB's standing technical committees remain strong, as researchers and practitioners regularly share information about TRB's transportation-research resources and opportunities. Attendees of TRB's symposia, forums, and conferences report that approximately 60 percent have discovered the event from a colleague.

The ease of finding TRB online helps to reach emerging transportation professionals and researchers who may be unfamiliar with TRB's many offerings. In 2022, TRB continued to work toward transitioning all TRB-sponsored events to a single website and improving the search results of these events. TRB webinars gained an increased presence on the new web platform to further bolster them in search results. Approximately 5 percent of the professionals at TRB webinars report that they are new to the program and are attending for the first time. TRB Webinar: Considering Quality of Life in Transportation Planning and Development was particularly popular in pulling in first-time attendees last August.

Services like TRB Snap Searches from the TRB Library, which introduce researchers and practitioners to TRB-specific materials and are organized by topic, now also have a presence on the new website. Continuing to build information on a single platform will help TRB's findability in the future as its multiple websites no longer compete against each other in search results.

Communicate the Value of TRB and Research

"Research is vital to the transportation sector," says Shawn D. Wilson, TRB Executive Committee Vice Chair and Secretary of the Louisiana Department of Transportation and Development. "It informs and improves the way we deliver projects and services. Our implementation of research in Louisiana has led to valuable savings greater than $500 million over three decades."

In February, the first TRB Emerging Transportation Leaders 4-Week Networking Challenge launched on LinkedIn. Ideal for professionally minded individuals age 35 and younger, the challenge was designed to give future leaders in transportation a social and professional networking boost. Each week featured a new assignment with a different theme to engage with TRB's professional development services. Interaction increased in *TRB Weekly* as the challenges progressed, and posts were clicked more than average TRB posts on Twitter and LinkedIn, confirming that professionals were eager for guidance on furthering their careers with TRB.

On Twitter, a post announcing that TRB received nearly 50 percent of papers for the 2023 TRB Annual Meeting on the submission deadline was one of the most engaging news items of the year.

A LinkedIn post announcing that the presentations from TRB's International Conference on Roundabouts were available reached nearly 3,000 people. TRB audiences are finding the information they need by connecting with TRB on social media.

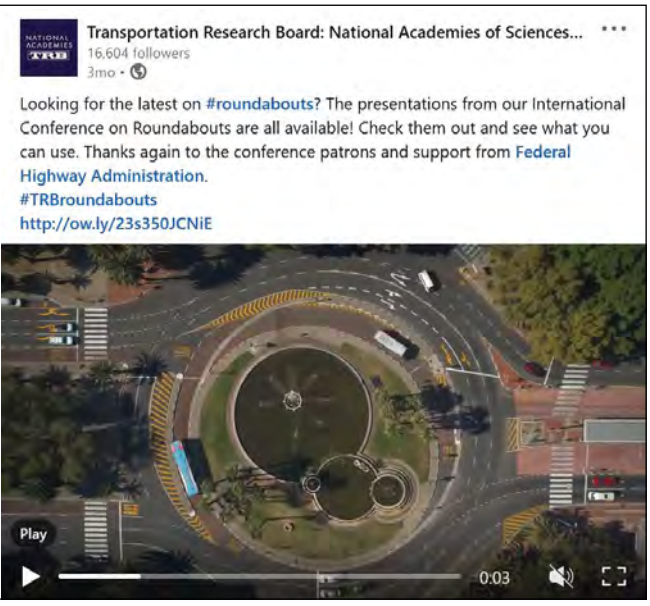
Make TRB the Go-To, Essential, Up-to-Date Source

TRB's Communications Director Paul Mackie received a note from Deon J. Hampton, National Reporter at NBC News Digital, saying,

Virginia DOT

"You're literally becoming the first call I make on tough transportation stories, so I just want to say thanks."

In 2022, TRB services and research were cited by mainstream and trade media more than 100 times per month, on average. Some of the highlights included coverage by the *New York Times* and the *Washington Post* of the 2022 TRB Annual Meeting. A 2022 *Time* magazine article noted a 2013 TCRP publication—*Millennials and Mobility: Understanding the Millennial Mindset and New Opportunities for Transit Providers*—focused on cities hoping to attract remote workers. The report states the importance of efficient, accessible, multimodal, and sustainable ways to move people around. Upcoming research on commercial truck driver pay was highlighted by both The White House and Bloomberg Government.



The National Academies' Climate Conversations series has taken off in 2022. Each Climate Conversation livestream attracts an average of 700 live viewers, and more than 700 people view the recording. TRB has contributed to planning two of the regular events: one on electric vehicle infrastructure and another on urban transportation emissions and improved mobility.

"Using the transportation system as a gateway to not only uplift the economic conditions of the people of Los Angeles but also reduce environmental impacts," is a top concern for the Los Angeles County Metropolitan Transportation Authority, according to its Chief Sustainability Officer and TRB volunteer Cris Liban. He views this holistic approach

as being part of a larger context of working to create an environment where everyone benefits.

Increase TRB's Impact on Solving Transportation and Societal Challenges

TRB events tackled some of the most critical issues of climate resiliency and sustainability, economic opportunity, public health, safety, and equity. As such, communications campaigns were built to further promote the conferences on automated vehicles, accessibility, and scenario planning.

Speakers at the Automated Road Transportation Symposium recorded promotional videos to increase excitement about their sessions that were promoted on TRB's website, newsletters, and social media channels. The video produced by Richard Bishop, owner of Bishop Consulting, discussed automated trucking and was viewed more than 1,200 times. The website was visited by more than 3,100 people. One of TRB's most engaging posts on Twitter in 2022 announced the session on international policy for automated vehicles. Posts announcing the conference dates and Bishop's video were liked or clicked by more than 40 percent of those who saw them.

The TRANSED: Mobility, Accessibility, and Demand Response Transportation Conference drew 1,200 website visitors and proved engaging on LinkedIn, where attendees and speakers clicked before the event and shared their experiences as it took place.

TRB's Conference on Scenario Planning tackled a challenging topic for the industry but grabbed the attention of a wide audience. More than 1,000 people clicked the conference link, while projected attendance was around 200 participants. Kansas DOT Secretary and TRB Executive Committee member Julie Lorenz live tweeted her presentation, pointing out the challenges as well as the benefits to embracing a new method.

Shine a Wide Spotlight

"TRB is an organization encouraging diversity and inclusion and has appointed a significant number of women leaders to chair the committees and councils," says TRB volunteer Yu Zhang. "It provides growth space for women transportation professionals in their career development."

Throughout the year, volunteers shared their thoughts on the importance of TRB honoring cultural awareness months and resources around those given topics. More than 30 TRB volunteers expressed their thoughts and shared resources about Black History Month, Women's History Month, Asian American and Pacific Islander Month, LGBTQIA+ Pride Month, Americans with Disabilities Act anniversary week, Hispanic and Latino Heritage Month, and Native American Heritage Month.

Approximately 30 posts in TRB's ongoing blog series were new or updated this year to highlight emerging research, events, and TRB services. The posts also feature a number of TRB volunteers' expertise on topics. Volunteers represent a range of locations, transportation modes, and stages in their careers, including chairs of consensus committees and students just getting started in the field. A four-part series for the blog that focused on transportation equity remains popular, especially one on socioeconomic equity. It was updated this year to include—among other features—Wilmington Neighborhood Council Chair Gina Martinez's address to TRB's Marine Board Spring Meeting, which focused on community involvement and transportation connections to health inequities near the Port of Los Angeles.

As TRB's work continues to pursue some of the most challenging issues facing the industry, TRB will continue to share the results in new and inventive ways to reach its goals.

2023 AND THE FUTURE

TRB will begin the new year under new leadership. Following a national search, Victoria Sheehan joins the National Academies as TRB's new Executive Director, in time for the 2023 TRB Annual Meeting.

Sheehan comes to the National Academies from New Hampshire DOT, where she has led as its Commissioner for the past seven years. Responsible for an operating budget of more than $650 million, she oversaw a staff of more than 1,600 employees representing diverse areas such as aeronautics, rail, transit, construction, operations, finance, and administration. Her team led the development of New Hampshire's 10-Year Transportation Improvement Plan, and Sheehan worked directly with the governor, general court, and executive council to ensure that it would address the state's growing needs.

"We are excited that Victoria will be joining our leadership team," said Gregory Symmes, Chief Program Officer of the National Academies. "Her experience with complex, multifaceted projects and organizations will bring important skills not only to TRB, but to the important cross-disciplinary work that is necessary to address the implications for transportation on the ongoing challenges of climate change, pandemics, diversity, and economic growth."

Nathaniel P. Ford, TRB Executive Committee Chair and CEO of the Jacksonville Transportation Authority, went on to say: "Through our discussions about industry issues and her track record at New Hampshire Department of Transportation and AASHTO, I am confident that Victoria is an excellent choice to lead TRB in its crucial mission of providing transportation professionals with the research and advice they will need to address our shared challenges."

Sheehan will succeed Neil Pedersen, who has served as TRB's Executive Director for nearly eight years.

Upcoming Work on Critical Issues

One of Pedersen's legacies at TRB will be the focus he placed on the challenges and opportunities for transportation in equity, safety, climate resiliency and sustainability, economic opportunity, and public health.

A new *Critical Issues in Transportation* report is anticipated in early 2023. Forthcoming convening, research, and advising activities will address meeting these challenges.

Equity

One report that was released in late 2022—*TCRP Research Report 236: Racial Equity, Black America, and Public Transportation, Volume 1* summarizes common practices of the 20th and 21st centuries that had significant economic, health, and social impacts, and the racial gaps that emerged as a result of transportation inequities, deliberate actions, policies, and projects. Volume 2 will demonstrate a methodology to estimate how much it would cost to redress those damages. Volumes 3 and 4 will provide tools for elected and appointed officials and other stakeholder groups to engage effectively in the arena of transportation policy, planning, and funding at all levels of government.

Metrics and analytic methods so often drive decision making but are reliant on the data behind them. Opportunities for using data, metrics, and analytic methods will be identified to better inform federal agencies on how to allocate funds to improve equity for underserved communities in a report expected in 2023.

TRB's Conference on Advancing Transportation Equity is expected to return in 2024. In 2021, the highly popular conference focused on links between transportation and housing, telecommunications, health, policing, and economic development. Recordings of the 2021 presentations are available online.

Safety

A consensus study effort will examine the influence of safety research on the practice of road safety and the tools and resources used by practitioners. In particular, consideration will be given to how objective, evidence-based road safety research is produced and disseminated in a timely and consistent manner to inform the planning, design, and operations of road infrastructure. After assessing the research-to-practice process for road safety, the committee will explore equivalent processes from other fields and disciplines such as medicine, public health, and education, as well as other engineering-oriented fields such as commercial and residential building design and construction.

In response to a congressional mandate, a consensus study effort between the Division of Behavioral and Social Sciences and Education, the Health and Medicine Division, and TRB will examine drug and alcohol programs within U.S. DOT, FAA, and in similar industries and sectors. In particular, it will review the Human Intervention Motivation Study Program and the Flight Attendant Drug and Alcohol Program; explore best policies and practices, including best practices for prevention; and consider programs to implement or to change existing programs that could best assist employees in getting treatment and returning to work.

Look for forthcoming consensus committees to study other aspects of public health and safety. One will examine potential safety risks from the operation of trains longer than 7,500 feet relative to the operation of shorter trains. Another will examine the impacts of existing methods of compensation on commercial motor vehicle driver retention and safety performance in the U.S. long-haul trucking and intercity bus sectors.

Sustainability

Domestic and international examples will identify opportunities for repurposing plastics

in asphalt, other transportation infrastructure, and in infrastructure outside of the transportation domain. The study aims to also examine opportunities to improve plastic recycling processes and the upstream manufacturing and use of plastics to make them compatible with the safe and effective repurposing of plastics waste in infrastructure.

Convened by TRB, the National Conference on Transportation Asset Management will be held July 8–11, 2023, in Boston, Massachusetts. The conference will cover a broad range of asset management topics to help transportation agencies manage their infrastructure assets to meet needs today and in the future. A focus of this conference will be the development of actionable asset management plans that demonstrate integration with agency processes to inform decision making.

Economic Opportunity

TRB's conference on Measuring Supply Chain Performance: Metrics, Data, and Policy Perspectives will be held April 12–13, 2023, in Washington, DC. The event will bring together experts on supply chain performance from the private- and public-sector workforce. Speakers will share applications for and approaches to performance measurement; compare metrics, data sources, and tools; identify shared interests and challenges; and outline needs for research and improved data.

Later in the spring, TRB's National Aviation System Planning Symposium will be held May 15–18, 2023, in Irvine, California. Speakers and participants will convene to evaluate the latest developments as they affect the challenges of planning the national aviation system of the future.

More to Explore

1. TRB 2022–2027 Strategic Plan
   https://onlinepubs.trb.org/onlinepubs/general/TRB_Strategic_Plan_2022_2027.pdf
2. U.S. Secretary of Transportation Pete Buttigieg Addresses the 101st TRB Annual Meeting
   https://www.youtube.com/watch?v=E4wrV15eqPk
3. Anne Strauss-Wieder Presents the 2022 Thomas B. Dean Distinguished Lectureship
   https://www.youtube.com/watch?v=1bCauJWqyYA&t=845s
4. Get Involved with the Transportation Research Board
   https://www.nationalacademies.org/trb/get-involved
5. TRB 2022 Diversity, Equity, and Inclusion Strategic Plan
   https://onlinepubs.trb.org/onlinepubs/general/TRB_Diversity_Equity_Inclusion_Strategic_Plan_2022.pdf
6. Strategic Plan for TRB International Activities 2022–2027
   https://onlinepubs.trb.org/onlinepubs/general/TRB_International_Activities_Strategic_Plan_2022_2027.pdf
7. In Service to the Nation and the World
   https://www.nationalacademies.org/in-service-to-the-nation-and-the-world
8. Evaluating Transportation Equity: ITE Quickbite
   https://www.planetizen.com/news/2022/02/116058-evaluating-transportation-equity-ite-quickbite
9. *Transportation Research Record*
   http://journals.sagepub.com/home/trr
10. *TR News*
    https://www.trb.org/Publications/PubsTRNewsMagazine.aspx
11. Sustainability and Emerging Transportation Technology (SETT) Conference
    https://www.nationalacademies.org/event/ 03-15-2022/sustainability-and-emerging-transportation-technology-sett-conference
12. TRB's Automated Road Transportation Symposium
    https://www.nationalacademies.org/event/07-18-2022/trbs-automated-road-transportation-symposium
13. Conference on Scenario Planning in Transportation Planning
    https://www.nationalacademies.org/event/09-19-2022/conference-on-scenario-planning-in-transportation-planning
14. TRANSED: Mobility, Accessibility, and Demand Response Transportation Conference
    https://www.nationalacademies.org/event/09-12-2022/transed-mobility-accessibility-and-demand-response-transportation-conference
15. TRB: TCRP Insight Event—Air Quality in Transit Buses
    https://www.nationalacademies.org/event/06-21-2022/trb-tcrp-insight-event-air-quality-in-transit-buses
16. TRB ACRP Insight Event—Future of Aviation
    https://www.nationalacademies.org/event/03-22-2022/acrp-insight-event-future-of-aviation
17. TRB ACRP Insight Event—Systemic Inequality in the Airport Industry: Exploring the Racial Divide
    https://www.nationalacademies.org/event/04-12-2022/trb-acrp-insight-event-systemic-inequality-in-the-airport-industry-exploring-the-racial-divide

18. Eleftheria "Ria" Kontou Profile
https://cee.illinois.edu/directory/profile/kontou
19. *ACRP Research Report 236: Preparing Your Airport for Electric Aircraft and Hydrogen Technologies*
https://doi.org/10.17226/26512
20. Jonathan Rubin on What's Next for Maine's Greener Transportation Future
https://umaine.edu/news/blog/2022/04/20/jonathan-rubin-on-whats-next-for-maines-greener-transportation-future/
21. *NCHRP WebResource 1: Reducing Greenhouse Gas Emissions*
https://crp.trb.org/nchrpwebresource1/
22. *NCHRP Web-Only Document 308: Methods for State DOTs to Reduce Greenhouse Gas Emissions from the Transportation Sector*
https://doi.org/10.17226/26523
23. *NCHRP Research Report 984: Breaking Barriers—Alternative Approaches to Avoiding and Reducing Highway Traffic Noise Impacts*
https://doi.org/10.17226/26469
24. *NCHRP Research Report 969: Traffic Signal Control Strategies for Pedestrians and Bicyclists*
https://doi.org/10.17226/26491
25. *TCRP Research Report 233: Strategies for Deterring Trespassing on Rail Transit and Commuter Rail Rights-of-Way, Volume 2: Research Overview*
https://doi.org/10.17226/26503
26. *NCHRP Web-Only Document 323: Highway Safety Manual User Guide*
https://doi.org/10.17226/26552
27. *TCRP Research Report 236: Racial Equity, Black America, and Public Transportation, Volume 1—A Review of Economic, Health, and Social Impacts*
https://doi.org/10.17226/26710
28. *TCRP Synthesis 162: Coordination of Public Transit Services and Investments with Affordable Housing Policies*
https://doi.org/10.17226/26542
29. *TCRP Research Report 228: Resource Guide for Improving Diversity and Inclusion Programs for the Public Transportation Industry*
https://doi.org/10.17226/26230
30. *TCRP Synthesis 164: Bus Rapid Transit: Current State of Practice*
https://doi.org/10.17226/26597
31. *ACRP Web-Only Document 53: Measuring and Understanding the Relationship Between Air Service and Regional Economic Development*
https://doi.org/10.17226/26682
32. ACRP WebResource 12: Air Service Development and Regional Economic Activity
https://crp.trb.org/acrpwebresource12
33. *Highway Capacity Manual, 7th Edition: A Guide for Multimodal Mobility*
https://doi.org/10.17226/26432
34. Lily Elefteriadou on LinkedIn
https://www.linkedin.com/feed/update/urn:li:activity:6939606922039898112/
35. TRID Database
https://trid.trb.org/
36. *TCRP Research Report 232: The Impacts of Vehicle Automation on the Public Transportation Workforce*
https://doi.org/10.17226/26613
37. Minority Student Fellows
https://www.nationalacademies.org/news/2022/08/trb-announces-24-minority-student-fellows-for-2023
38. Winners Selected for the 2021–2022 TRB Airport Cooperative Research Program University Design Competition for Addressing Airport Needs
https://www.nationalacademies.org/news/2022/07/winners-selected-for-the-2021-2022-trb-airport-cooperative-research-program-university-design-competition-for-addressing-airport-needs
39. *COVID-19 Addendum to Critical Issues in Transportation*
https://doi.org/10.1722626047
40. *Racial Equity Addendum to Critical Issues in Transportation*
https://doi.org/10.17226/26264
41. *TRB Special Report 340: Investing in Transportation Resilience—A Framework for Informed Choices*
https://doi.org/10.17226/26292
42. *Emerging Hazards in Commercial Aviation—Report 1: Initial Assessment of Safety Data and Analysis Processes*
https://doi.org/10.17226/26673
43. *Preparing for LNG by Rail Tank Car: A Readiness Review*
https://doi.org/10.17226/26719
44. *A Report Series on Progress and Opportunities Toward Decreasing the Risk of Offshore Energy Operations*
https://www.nationalacademies.org/our-work/a-report-series-on-progress-and-opportunities-toward-decreasing-the-risk-of-offshore-energy-operations
45. New Duck Boats on Branson Lake on 4th Anniversary of Deadly Sinking
https://www.ozarksfirst.com/local-news/regional-news/branson-news/new-duck-boats-on-branson-lake-on-4th-anniversary-of-deadly-sinking/
46. *TRB Special Report 342: Options for Improving the Safety of DUKW Type Amphibious Vessels*
https://doi.org/10.17226/26447
47. UND Aerospace to Get the Lead Out
https://stateaviationjournal.com/index.php/state-news/north-dakota/und-aerospace-to-get-the-lead-out
48. *TRB Special Report 336: Options for Reducing Lead Emissions from Piston-Engine Aircraft*
https://doi.org/10.17226/26050
49. *Research and Technology Coordinating Committee Letter Report: September 29, 2022*
https://doi.org/10.17226/26758
50. TRB 2022 Annual Meeting—Innovation for Transformation: Safety, Economic Strength, Equity, and Climate
https://vimeo.com/665039259
51. The National Academies, Our Volunteers
https://www.nationalacademies.org/about/volunteers
52. TRB Webinar: Considering Quality of Life in Transportation Planning and Development
https://www.nationalacademies.org/event/08-25-2022/trb-webinar-considering-quality-of-life-in-transportation-planning-and-development
53. Desperately in Demand This Pandemic Winter: Snowplow Operators
https://www.nytimes.com/2022/01/15/us/snow-plow-drivers-shortage.html
54. Transportation: Infrastructure Programs on Hold Until Congress Passes Budget to Fund Them
https://www.washington-post.com/transportation/2022/01/29/infrastructure-climate-goals-delay/
55. Ideas: How More Cities Worldwide Can Attract Remote Workers
https://time.com/6168289/cities-attracting-remote-workers/

56. *Millennials and Mobility: Understanding the Millennial Mindset and New Opportunities for Transit Providers* https://doi.org/10.17226/22500
57. Fact Sheet: The Biden Administration's Unprecedented Actions to Expand and Improve Trucking Jobs https://www.whitehouse.gov/briefing-room/statements-releases/2022/04/04/fact-sheet-the-biden-administrations-unprecedented-actions-to-expand-and-improve-trucking-jobs/
58. Teens Driving 18-Wheelers Among Efforts to Help Supply Chain https://about.bgov.com/news/trucker-pay-young-driver-efforts-deployed-to-help-supply-chain/
59. Climate Conversations: EV Infrastructure https://www.nationalacademies.org/event/03-22-2022/climate-conversations-ev-infrastructure
60. Building Socioeconomic Equity Through Transportation Research https://www.nationalacademies.org/trb/blog/building-socioeconomic-equity-through-transportation-research
61. Data, Metrics, and Analytic Methods for Assessing Equity Impacts of Surface Transportation Funding Programs https://www.nationalacademies.org/our-work/data-metrics-and-analytic-methods-for-assessing-equity-impacts-of-surface-transportation-funding-programs
62. TRB Conference on Advancing Transportation Equity: Bridging the Divide Between People, Research, and Practice https://trb.secure-platform.com/aa/page/transportationequity
63. Transitioning Evidence-Based Road Safety Research into Practice https://www.nationalacademies.org/our-work/transitioning-evidence-based-road-safety-research-into-practice
64. Study and Recommendations on the HIMS, FADAP, and Other Drug and Alcohol Programs Within the USDOT https://www.nationalacademies.org/our-work/study-and-recommendations-on-the-hims-fadap-and-other-drug-and-alcohol-programs-within-the-usdot
65. Repurposing Plastics Waste in Infrastructure https://www.nationalacademies.org/our-work/repurposing-plastics-waste-in-infrastructure
66. TRB 14th National Conference on Transportation Asset Management https://trb.secure-platform.com/a/page/asset_management
67. TRB's National Aviation System Planning Symposium https://www.nationalacademies.org/event/05-15-2023/trbs-national-aviation-system-planning-symposium

TRB Volunteer Leadership

TRB's Executive Committee provides strategic direction and oversight of TRB's programs and activities. The 26 appointed members of the volunteer Executive Committee are chosen from among public- and private-sector executives, prominent academicians, and members of the National Academies. In addition, 19 ex officio members—top executives from TRB's sponsoring agencies—serve on the Executive Committee. Two former Executive Committee chairs serve as "ex officio voting members."

Transportation Research Board 2022 Executive Committee (as of November 2022)

Chair Nathaniel P. Ford, Sr., Chief Executive Officer, Jacksonville Transportation Authority, Jacksonville, Florida

Vice Chair Shawn Wilson, Secretary, Louisiana Department of Transportation and Development, Baton Rouge

Neil J. Pedersen, Executive Director, Transportation Research Board, Washington, DC

Michael F. Ableson, Chief Executive Officer, Arrival Automotive–North America, Detroit, Michigan

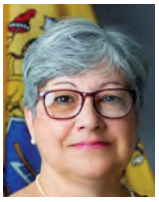
James F. Albaugh, President and Chief Executive Officer, The Boeing Company (*retired*), Scottsdale, Arizona

Douglas C. Ceva, Vice President, Customer Lead Solutions, Prologis, Inc., Jupiter, Florida

Marie Therese Dominguez, Commissioner, New York State Department of Transportation, Albany

Ginger Evans, President, Tower Consulting, Arlington, Virginia

Michael F. Goodchild, Professor Emeritus, Department of Geography, University of California, Santa Barbara



Diane Gutierrez-Scaccetti, Commissioner, New Jersey Department of Transportation, Trenton

Stephen W. Hargarten, Director, Injury Research Center, Associate Dean, Office of Global Health, Professor, Emergency Medicine, Medical College of Wisconsin, Milwaukee

Chris T. Hendrickson, Hamerschlag University Professor of Engineering Emeritus, Carnegie Mellon University, Pittsburgh, Pennsylvania

Randell Iwasaki, Leader of State and Local Transportation, Amazon Web Services, Walnut Creek, California

Ashby Johnson, Executive Director, Capital Area Metropolitan Planning Organization, Austin, Texas

Joel M. Jundt, Secretary of Transportation, South Dakota Department of Transportation, Pierre

Drew Kodjak, Executive Director, International Council on Clean Transportation, Washington, DC

Carol A. Lewis, Professor, Transportation Studies, Texas Southern University, Houston

Julie Lorenz, Secretary, Kansas Department of Transportation, Topeka

Michael R. McClellan, Vice President, Strategic Planning, Norfolk Southern Corporation, Norfolk, Virginia

Patrick K. McKenna, Director, Missouri Department of Transportation, Jefferson City

Russell McMurry, Commissioner, Georgia Department of Transportation, Atlanta

Craig E. Philip, Research Professor and Director, VECTOR, Department of Civil and Environmental Engineering, Vanderbilt University, Nashville, Tennessee

Steward T.A. Pickett, Distinguished Senior Scientist, Cary Institute of Ecosystem Studies, Millbrook, New York

Leslie S. Richards, General Manager, Southeastern Pennsylvania Transportation Authority, Philadelphia

James M. Tien, Distinguished Professor and Dean Emeritus, College of Engineering, University of Miami, Coral Gables, Florida

Michael R. Berube, Deputy Assistant Secretary for Sustainable Transportation, U.S. Department of Energy, Washington, DC (*ex officio*)

Amit Bose, Administrator, Federal Railroad Administration, Washington, DC (*ex officio*)

Carlos M. Braceras, Executive Director, Utah Department of Transportation, Salt Lake City (*ex officio*)

Tristan Brown, Deputy Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington, DC (*ex officio*)

Ann Carlson, Acting Administrator, National Highway Traffic Safety Administration, Washington, DC (*ex officio*)

Steven Cliff, Executive Officer, California Air Resources Board, Planning and Technical Support Division, Sacramento (*ex officio*)

Nuria I. Fernandez, Administrator, Federal Transit Administration, Washington, DC (*ex officio*)

LeRoy Gishi, Chief, Division of Transportation, Bureau of Indian Affairs, U.S. Department of the Interior, Germantown, Maryland (*ex officio*)

William H. Graham, Jr. (Major General, U.S. Army), Deputy Commanding General for Civil and Emergency Operations, U.S. Army Corps of Engineers, Washington, DC (*ex officio*)

John T. Gray II, Senior Vice President, Policy and Economics, Association of American Railroads, Washington, DC (*ex officio*)

Robert C. Hampshire, Deputy Assistant Secretary for Research and Technology, U.S. Department of Transportation, Washington, DC (*ex officio*)

Robin Hutcheson, Administrator, Federal Motor Carrier Safety Administration, Washington, DC (*ex officio*)

Eleftheria "Ria" Kontou, Assistant Professor, University of Illinois, Urbana–Champaign, Urbana, and Chair, TRB Young Members Coordinating Council (*ex officio*)

Billy Nolen, Acting Administrator, Federal Aviation Administration, U.S. Department of Transportation, Washington, DC (*ex officio*)

Stephanie Pollack, Acting Administrator, Federal Highway Administration, U.S. Department of Transportation, Washington, DC (*ex officio*)

Susan A. Shaheen, Professor and Co-Director, Transportation Sustainability Research Center, University of California, Berkeley (*ex officio*)

Karl Simon, Director, Transportation and Climate Division, U.S. Environmental Protection Agency, Washington, DC (*ex officio*)

Paul P. Skoutelas, President and Chief Executive Officer, American Public Transportation Association, Washington, DC (*ex officio*)

Polly Trottenberg, Deputy Secretary of Transportation, U.S. Department of Transportation, Washington, DC (*ex officio*)

Jim Tymon, Executive Director, American Association of State Highway and Transportation Officials, Washington, DC (*ex officio*)

APPENDIX A ■ *Statement of Activities*

Funding Support by Program and Expenditures, Calendar Years 2021 and 2022

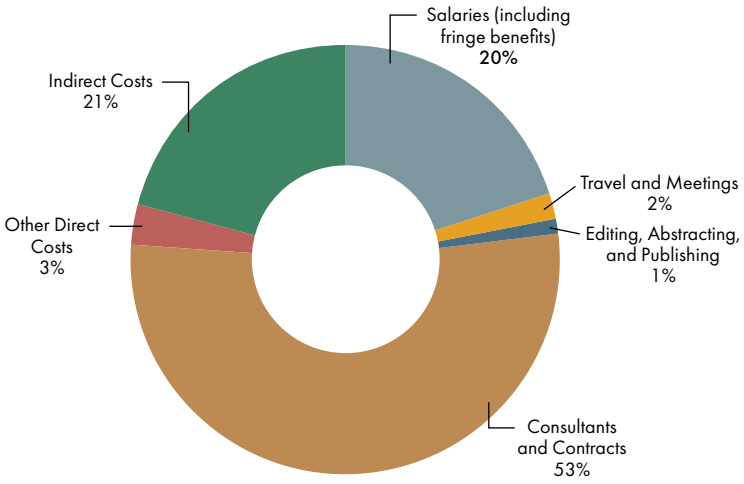
	2021 (Actual)	2022 (Projected)*
Core Technical Activities		
State Highway and Transportation Departments (State DOTs)	**$8,004,000**	**$8,602,000**
Federal Government		
Federal Highway Administration (FHWA)	1,400,000	1,400,000
Office of the Assistant Secretary of Transportation for Research and Technology (OST-R)	81,000	375,000
Federal Transit Administration (FTA)	194,000	322,000
National Highway Traffic Safety Administration (NHTSA)	127,000	233,000
U.S. Department of the Interior	85,000	85,000
U.S. Department of Energy (DOE)	76,000	77,000
U.S. Environmental Protection Agency	76,000	77,000
Federal Aviation Administration (FAA)	42,000	76,000
Federal Railroad Administration	38,000	76,000
Pipeline and Hazardous Materials Safety Administration	38,000	76,000
Federal Motor Carrier Safety Administration	31,000	76,000
U.S. Army Corps of Engineers	75,000	75,000
U.S. Air Force Civil Engineer Center	76,000	63,000
Subtotal, Federal Government	**$2,339,000**	**$3,011,000**
Other		
California Air Resources Board	81,000	82,000
American Public Transportation Association	76,000	76,000
Association of American Railroads	76,000	76,000
Fees and Sales	4,450,000	5,500,000
Subtotal, Other	**$4,683,000**	**$5,734,000**
Total, Core Technical Activities	**$15,026,000**	**$17,347,000**
Marine Board Core Program		
U.S. Coast Guard	75,000	75,000
U.S. Army Corps of Engineers	75,000	75,000
Office of Naval Research	65,000	65,000
National Oceanic and Atmospheric Administration	40,000	40,000
Bureau of Safety and Environmental Enforcement	30,000	30,000
Maritime Administration	19,000	19,000
U.S. Navy Supervisor of Salvage and Diving	12,000	12,000
Total, Marine Board Core Program	**$316,000**	**$316,000**
Cooperative Research Programs		
National Cooperative Highway Research Program (State DOTs)	40,463,000	41,637,000
Airport Cooperative Research Program (FAA)	12,476,000	13,333,000
Transit Cooperative Research Program (FTA)	4,687,000	5,160,000
Behavioral Traffic Safety Cooperative Research Program (Governors Highway Safety Association, NHTSA)	1,675,000	1,974,000
Total, Cooperative Research Programs	**$59,301,000**	**$62,104,000**

	2021 (Actual)	2022 (Projected)*
Rail Safety IDEA Program	**$223,000**	**$460,000**
Evaluations of FHWA Research and Technology Program Projects	**$715,000**	**$978,000**
Policy Studies	**$2,611,000**	**$3,318,000**
Conferences, Workshops, Forums, and Research Projects	**$1,393,000**	**$1,893,000**
TRB TOTAL	**$79,585,000**	**$86,416,000**
Sources of Funds		
Federal	25,129,000	28,691,000
State DOTs	48,467,000	50,239,000
Other	5,989,000	7,486,000
	$79,585,000	**$86,416,000**
Expenditures by Major Cost Category		
Salaries (including fringe benefits)	16,295,000	16,974,000
Travel and Meetings	409,000	1,895,000
Editing, Abstracting, and Publishing	950,000	1,048,000
Consultants and Contracts	39,938,000	44,551,000
Other Direct Costs	2,343,000	2,460,000
Indirect Costs	18,773,000	17,759,000
Total Expenditures	**$78,708,000**	**$84,687,000**
TRB Reserve Fund		
Fund balance, end of previous fiscal year	$17,589,000	$18,466,000
Plus (minus) current fiscal year income over (under) expenditures	877,000	1,729,000
Balance, current fiscal year	**$18,466,000**	**$20,195,000**

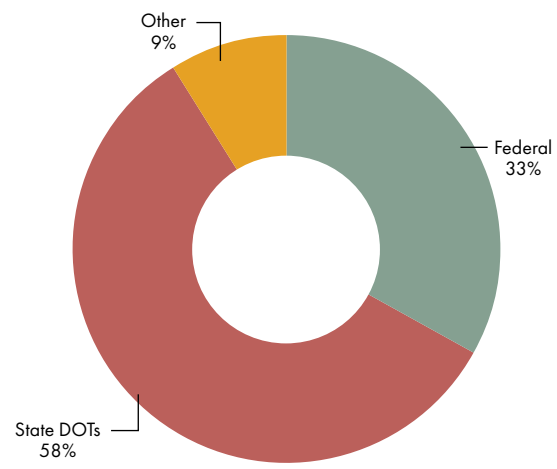
In 1965, the TRB Executive Committee approved a reserve fund to provide for orderly adjustments in the event of a temporary shortfall in anticipated revenues for TRB technical activities. This fund, built up over the years from surplus income in excess of expenditures from nonfederal sources for any one fiscal year, is reserved for expenditures in excess of income for any later fiscal year under a fixed budget approved annually by the TRB Executive Committee.

* Calendar Year 2022 comprises actual data through October and estimates for the remainder of the year.

Distribution of TRB Expenditures



TRB Funding Support



APPENDIX B ■ *Institutional Affiliates*

Sponsors

State Transportation Departments
(Listed with TRB Representatives)

Alabama Department of Transportation
Kidada Dixon

Alaska Department of Transportation and Public Facilities
Anna Bosin

Arizona Department of Transportation
Dianne Kresich

Arkansas Department of Transportation
Mark Headley

California Department of Transportation
Dara Wheeler

Colorado Department of Transportation
Stephen Cohn

Connecticut Department of Transportation
Edgardo Block

Delaware Department of Transportation
Pamela Steinebach

District Department of Transportation
Stephanie Dock

Florida Department of Transportation
James D. Dockstader

Georgia Department of Transportation
Supriya Kamatkar

Hawaii Department of Transportation
Casey C. Abe

Idaho Transportation Department
Ned E. Parrish

Illinois Department of Transportation
Megan Swanson

Indiana Department of Transportation
Barry K. Partridge

Iowa Department of Transportation
Peggi S. Knight

Kansas Department of Transportation
Daniel Wadley

Kentucky Transportation Cabinet
Jarrod Stanley

Louisiana Department of Transportation and Development
Samuel Cooper

Maine Department of Transportation
Dale Peabody

Maryland State Highway Administration
Richard Y. Woo

Maryland Department of Transportation
Hua Xiang

Massachusetts Department of Transportation
Stephen Woelfel

Michigan Department of Transportation
Michael Townley

Minnesota Department of Transportation
Hafiz Munir

Mississippi Department of Transportation
Cynthia Smith

Missouri Department of Transportation
Jennifer Harper

Montana Department of Transportation
Rebecca Ridenour

Nebraska Department of Roads
Brandon Varilek

Nevada Department of Transportation
Ken Chambers

New Hampshire Department of Transportation
Diedre Nash

New Jersey Department of Transportation
Amanda Gendek

New Mexico Department of Transportation
Hao Yin

New York State Department of Transportation
Wei-Shih Yang

North Carolina Department of Transportation
Humberto Tasaico

North Dakota Department of Transportation
Matthew Linneman

Ohio Department of Transportation
Vicky Fout

Oklahoma Department of Transportation
Teresa Stephens

Oregon Department of Transportation
Michael Edward Bufalino

Pennsylvania Department of Transportation
Brian Wall

Rhode Island Department of Transportation
Christos Xenophontos

South Carolina Department of Transportation
Terry Swygert

South Dakota Department of Transportation
David L. Huft

Tennessee Department of Transportation
David Lee

Texas Department of Transportation
Kevin Pete

Utah Department of Transportation
Cameron T. Kergaye

Vermont Agency of Transportation
Emily Parkany

Virginia Department of Transportation
Michael Fitch

Washington State Department of Transportation
Anne Freeman

West Virginia Department of Transportation
Perry Keller

Wisconsin Department of Transportation
Diane Gurtner

Wyoming Department of Transportation
Ethan Crockett

Federal Government

U.S. Department of Transportation
- **Federal Aviation Administration**
- **Federal Highway Administration**
- **Federal Motor Carrier Safety Administration**
- **Federal Railroad Administration**
- **Federal Transit Administration**
- **National Highway Traffic Safety Administration**
- **Office of the Assistant Secretary of Transportation for Research and Technology**
- **Pipeline and Hazardous Materials Safety Administration**
- **Office of the Under Secretary for Policy**

U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Department of Energy
U.S. Department of the Interior
U.S. Environmental Protection Agency

Other Organizations

American Association of State Highway and Transportation Officials
American Public Transportation Association
Association of American Railroads
California Air Resources Board

Marine Board Sponsors

Bureau of Safety and Environmental Enforcement
Maritime Administration
National Oceanic and Atmospheric Administration
Office of Naval Research
Office of the Supervisor of Salvage and Diving, U.S. Navy
U.S. Army Corps of Engineers
U.S. Coast Guard

Global Affiliate Sustaining Circle

Applied Research Associates, Inc.
ARUP
Caliper Corporation
HDR
HNTB
Jacobs
Kittelson & Associates, Inc.
Michael Baker International, Inc.
National Transportation Safety Board
Port Authority of New York and New Jersey
Texas A&M Transportation Institute
The World Bank
U.S. Air Force Civil Engineer Center
U.S. Department of Agriculture
VHB
Washington Metropolitan Area Transit Authority
WSP

Calendar and Fiscal Year 2022 Core Financial Support Provided by
- 92 Sponsor and Sustaining Global Affiliates
- 51 Organizational Affiliates from 11 nations
- More than 600 Individual Affiliates

APPENDIX C ■ TRB Webinars, Conferences, and Workshops

January 1–December 31, 2022
In-person conferences and workshops are noted with their location.

JANUARY

9–13 TRB 101st Annual Meeting

FEBRUARY

3 TRB Webinar: Improving Diversity and Inclusion Programs in Public Transportation

10 TRB Webinar: Embracing the Unknown—Strategic Transportation Planning in the Pandemic Age

15 TRB Webinar: On the Edge—New Applications and Safety Outcomes of Edge Lane Roads

22 TRB Webinar: Designing and Constructing Concrete with Advancing Technologies

23 TRB Webinar: Transportation in an Aging Society—The Future Is Now

28 TRB Webinar: End Communication Breakdown—Practices in Airport Emergency Plans

MARCH

9 TRB Webinar: Micromobility and Transit—Keys to Successful Collaboration

14 TRB Webinar: Using Buried Bridge Techniques to Accelerate Bridge Construction Processes

20–23 American Society of Civil Engineers (ASCE) Geo-Congress 2022*
Charlotte, North Carolina

22 TRB Webinar: How Rough Is Your Pavement? Measuring Pavement Profiles for Low-Speed Roads

22–24 International Data Science for Pavements Symposium*
McLean, Virginia

29 TRB Webinar: Robot-Enabled Sensing and Augmented Learning for Bridge Inspection

APRIL

3–6 International Conference on Accelerated Pavement Testing*
Nantes, France

5 TRB Webinar: Creating Inclusive Mobility

7 TRB Webinar: Rethinking Parking to Enhance Airport Revenues

14 TRB Webinar: Emerging Issues in Priced Managed Lane Networks

14 TRB Webinar: Implementing and Evaluating Wildlife Crossings

20 TRB Webinar: Managing and Sharing Research Data for Public Access

MAY

13 TRB Webinar: Understanding the Effects of COVID-19 on Impaired Driving

15–17 Road Use Charging and Finance Conference*
Denver, Colorado

15–18 International Conference on Roundabouts
Monterey, California

17 TRB Webinar: Telecommunication at Airports—Trends and Legal Considerations

17 Research Day at ITF Annual Summit*
Leipzig, Germany

19 TRB Webinar: Collaborating to Reduce Greenhouse Gas Emissions

23–25 TRB Workshop at the Highway Geology Symposium*
Asheville, North Carolina

25 TRB Webinar: Innovations in Testing—Modified Binders Cracking Resistance

26 TRB Webinar: Sustainable, Resilient, and Durable Concrete Pavements

31 TRB Webinar: Pavement Performance—Fundamentals and New Technologies

31–June 2 Conference on Sustainability and Emerging Transportation Technology
Irvine, California

JUNE

7 TRB Webinar: What's New in the HCM7 and Why It Matters

7–10 International Conference on Managing Pavement Assets*
Chicago, Illinois

8 TRB Webinar: Enhancing Public Health Equity Through Transportation

13–15 18th Biennial National Harbor Safety Committee Conference
Boston, Massachusetts

14 TRB Webinar: Saving Lives with Autonomous Truck Mounted Attenuator Systems

16–17 Investing in Transportation Resilience, Dissemination Event
Washington, DC

19–23 International Conference on Research in Air Transportation*
Tampa, Florida

21 TRB Webinar: Prioritization of Public Transportation Investments

21–22 TRB's TCRP Insight Event: Air Quality in Transit Buses

23 TRB Webinar: Geotechnical Data Applications and Visualization for Transportation

26–29 6th International Symposium on Highway Geometric Design*
Amsterdam, Netherlands

28 TRB Webinar: Performance-Based Application of the *Highway Safety Manual*

28–30 International Conference on the Bearing Capacity of Roads, Railways, and Airfields*
Trondheim, Norway

30 TRB Webinar: Implementing Biometric Technologies at Airports

JULY

7 TRB Webinar: Roadside Fire Risk and Prevention Strategies

11–15 International Conference on Bridge Maintenance, Safety, and Management*
Barcelona, Spain

13 TRB Webinar: Geotechnical Asset Performance in a Changing Climate

14 TRB Webinar: Evaluating Freeway and Arterial Connections in the New HCM7

15 TRB Webinar: Next Generation Information Systems for Transportation Projects

18–21 TRB's Automated Road Transportation Symposium
Garden Grove, California

21 TRB Webinar: Optimizing Unpaved Road Design with a Materials Blending Tool

24–26 International Symposium on Transportation and Traffic Theory*
Beijing, China

24–27 TRB Annual Workshop on Transportation Law
Portland, Oregon

25 TRB Webinar: Advances in Multiresolution Modeling for Traffic Analysis

25–27 Geospatial Data Acquisition Technologies in Design and Construction Summer Committee Meeting
Washington, DC

25–28 Ghana Infrastructure Conference*
Ghana

26 TRB Webinar: Strings Attached—Permissible Uses of Airport Property and Revenue

26 Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions—Pathways to an Equitable and Just Transition Workshop*
Washington, DC

27 Climate Change Challenges International Transportation Webinars*

AUGUST

3 TRB Webinar: Incorporating a Complex Transportation System in the New HCM7

4–5 Bridging Transportation Researchers Online Conference*

16 TRB Webinar: Temporary Pavement Markings and Removal in Work Zones

16–18 Summerail*
Michigan City, Indiana

16–19 National Hydraulic Engineering Conference*
Atlanta, Georgia

23 TRB Webinar: Integrating Performance, Asset, and Risk Management Is Value-Add

25 TRB Webinar: Considering Quality of Life in Transportation Planning and Development

29–31 TRB's Tools of the Trade Conference
Boise, Idaho

30 TRB Webinar: Complete the Puzzles in Planning and Environmental Linkages Practice

SEPTEMBER

6–9 International Conference of International Society for Intelligent Construction*
Guimaraes, Portugal

12–16 TRANSED: Mobility, Accessibility, and Demand Response Transportation Conference

15 TRB Webinar: Needs and Solutions for Automated Vehicle Infrastructure Implementation

19 TRB Webinar: Making the Research in Progress Database Work for You

19–21 Conference on Scenario Planning in Transportation
Washington, DC

21 TRB Webinar: Adaptive Flood Relief Techniques to Enhance Resiliency

22 TRB Webinar: Strategies to Improve the Quality of Pavement Condition Data

26–29 Society of Naval Architects and Marine Engineers Maritime Convention*
Houston, Texas

27 TRB Webinar: Pedestrian Analysis—Current Practice, Resources, and Applications

29 TRB Webinar: Performance Measures for State Aviation Agencies

OCTOBER

4 Review of Federal Highway Administration Infrastructure R&D: Expert Task Group on Pavements
Washington, DC

6 TRB Webinar: Supply Chain Risk and Resilience—Linking Transportation and Economic Models

11 TRB Webinar: Resistivity and Concrete Durability

11 Data, Metrics, and Analytic Methods for Assessing Equity Impacts of Surface Transportation Funding Programs Meeting #7*
Washington, DC

12 TRB Webinar: Withstanding Climate Change—Resilient & Flexible Pavement

18 TRB Webinar: New Era in Data Analytics for Bridge Foundation Design

19 TRB Webinar: Preparing the Next Generation of Airport Industry Professionals

20 TRB Webinar: Microtransit—Innovation in Rural Mobility

25 TRB Webinar: Safer Intersections for Pedestrians and Bicyclists

26 TRB Webinar: New Transit Fare Policy—Capping and "Cashless" Collection

27 TRB Webinar: Protocols for Macrotexture Measurement to Prevent Wet Weather Crashes

NOVEMBER

1–5 Maritime Risk Symposium*

3 TRB Webinar: Six Minute Pitch: A Transportation Startup Challenge

3–4 TRB's Symposium on Visualization in Transportation
Washington, DC

8 TRB Webinar: Mitigating the Legal Risk of Data Collected at Airports

9 TRB Webinar: Enabling Automated Truck Inspection for Safety

10 TRB Webinar: T-1 Steel, I-40 Bridge, and the Way Forward

17 TRB Webinar: Cybersecurity Trends in Transportation

22 TRB Webinar: Legal Considerations of Renewable Energy Production in State Right-of-Way

29 TRB Webinar: Managing Severe Storms and Environmental Impacts

30 TRB Webinar: State DOTs Perspective on Pavement Resilience

DECEMBER

5 TRB Webinar: Ruggedness Testing—Evaluating Asphalt Mixture Cracking Resistance

12 TRB Webinar: Expanding Microtransit Services and Improving the Rider Experience

12–14 Advances in Materials and Pavement Performance Prediction*
Hong Kong

13 TRB Webinar: Trends in Transit Ridership—Analysis, Causes, and Responses

15 TRB Webinar: Measuring and Managing Fare Evasion

* TRB was cosponsor of the meeting.

APPENDIX D ■ Publications

January 1–December 31, 2022

Transportation Research Record (online)

Volume 2676

Issue 1 January 2022
Issue 2 February 2022
Issue 3 March 2022
Issue 4 April 2022
Issue 5 May 2022
Issue 6 June 2022
Issue 7 July 2022
Issue 8 August 2022
Issue 9 September 2022
Issue 10 October 2022
Issue 11 November 2022
Issue 12 December 2022

Transportation Research Circulars (E-Circulars)

E-C276 State Departments of Transportation Experiences and Applications with Traffic Speed Deflection Devices
E-C277 13th National Conference on Transportation Asset Management
E-C278 Innovations in Freight Data Workshop
E-C279 Advancing Low- and Zero-Emission Marine Vessel Technology Options Workshop
E-C280 Glossary of Terms for Balanced Design of Asphalt Mixtures
E-C281 Advancing Transportation Equity: Conference Summary and Action Brief

TR News Magazine[1]

337 Preservation, Maintenance, and Renewal: A Strategic Approach to Prepare for the Future (January–February 2022)
338 Missing and Murdered Indigenous Women: How Can Transportation Stop Traffickers? (March–April 2022)
339 Pavement Preservation, Maintenance, and Rehabilitation (May–June 2022)
340 New Technologies in Highway Construction (July–August 2022)
341 Decarbonizing Transportation: Challenges and Pathways to 2050 (September–October 2022)
342 Getting Safely to the Other Side: Decision Support for Wildlife Crossing Programs (November–December 2022)

Online Newsletter

TRB Weekly

Airport Cooperative Research Program (ACRP)[2]

ACRP RESEARCH REPORTS

236 Preparing Your Airport for Electric Aircraft and Hydrogen Technologies
237 Primer and Framework for Considering an Airport Noise and Operations Monitoring System
238 Airfield Design for Large Unmanned Aircraft Systems—A Guide
240 Primer for Airport Organizational Redesign
241 Toward a Touchless Airport Journey
244 Advancing the Practice of State Aviation System Planning
245 Guide to Evaluating Airport Governance Structures
246 Airside Operations Safety: Understanding the Effects of Human Factors
247 Airfield Pavement Markings: Effective Techniques for Removal and Temporary Applications

ACRP SYNTHESES

116 Examples of Facility Space Provided for Community Use at Airports
117 Agricultural Operations on Airport Grounds
118 Airport Parking Pricing Strategies
119 Considerations for Establishing and Maintaining Successful Pollinator Programs on Airports
120 Airport Software Solutions and Services Sourcing

ACRP WEB-ONLY DOCUMENTS (WODs)

52 Command-Level Decision Making for Transportation Emergency Managers (joint with TCRP WOD 75 and NCHRP WOD 321)
53 Measuring and Understanding the Relationship Between Air Service and Regional Economic Development (and WebResource 12)
54 Development of a Small Aircraft Runway Length Analysis Tool

ACRP WEBRESOURCES

11 Construction Safety and Phasing Plans
12 Air Service Development and Regional Economic Activity (and WOD 53)
13 Airside Planning, Design, Construction, Operations and Maintenance

ACRP CONFERENCE PROCEEDINGS ON THE WEB

29 The Future of Aviation: Proceedings of an ACRP Insight Event

Behavioral Traffic Safety Cooperative Research Program (BTSCRP)[2]

BTSCRP RESEARCH REPORTS

1 Using Electronic Devices While Driving: Legislation and Enforcement Implications

2 Framework for Assessing Potential Safety Impacts of Automated Driving Systems (joint with NCHRP Research Report 1001)

3 Behavioral Traffic Safety Messaging on Variable Message Signs

BTSCRP WEB-ONLY DOCUMENTS

1 Influence of Infrastructure Design on Distracted Driving

2 Development of Research Problem Statements That Utilize Naturalistic Driving Data to Improve Teen Driving Safety

3 Developing Employer-Based Behavioral Traffic Safety Programs for Drivers in the Workplace (and WebResource 1)

BTSCRP RESEARCH RESULTS DIGEST

1 E-Scooter Safety: Issues and Solutions

BTSCRP WEBRESOURCES

1 Tool for Employer-Based Behavioral Traffic Safety Programs (and WOD 3)

National Cooperative Highway Research Program (NCHRP)[3]

NCHRP RESEARCH REPORTS

969 Traffic Signal Control Strategies for Pedestrians and Bicyclists

972 Development of Safety Performance-Based Guidelines for the Roadside Design Guide

977 Access Management in the Vicinity of Interchanges
- Volume 1: Practitioner's Guide
- Volume 2: Research Overview

979 Systematic Approach for Determining Construction Contract Time: A Guidebook (and WOD 298)

981 Guidelines for Quantifying Benefits of Traffic Incident Management Strategies (and WOD 301)

982 Relationships Between the Fatigue Properties of Asphalt Binders and the Fatigue Performance of Asphalt Mixtures

985 Integrating Effective Transportation Performance, Risk, and Asset Management Practices

986 Implementation of the AASHTO Guide for Enterprise Risk Management

987 Ruggedness of Laboratory Tests for Asphalt Mixture Cracking Resistance

988 Rural Transportation Issues: Research Roadmap

989 Reliability-Based Geotechnical Resistance Factors for Axially Loaded Micropiles

990 Guidebook for Effective Policies and Practices for Managing Surface Transportation Debt

991 Guidelines for the Development and Application of Crash Modification Factors

992 Guide to Pedestrian Analysis (and WOD 312)

993 Managing Performance to Enhance Decision-Making: Making Targets Matter (and WOD 317)

994 Use of 0.7-in. Diameter Strands in Precast Pretensioned Girders (and WOD 315)

995 Guidelines for Treatments to Mitigate Opposite Direction Crashes

996 Selection and Placement Guidelines for Test Level 2 Through Test Level 5 Median Barriers

997 Algorithms to Convert Basic Safety Messages into Traffic Measures

998 Planning Freight-Efficient Land Uses: Methodology, Strategies, and Tools

999 Design and Construction of Deck Bulb Tee Girder Bridges with UHPC Connections

1000 Accessibility Measures in Practice: A Guide for Transportation Agencies

1001 Framework for Assessing Potential Safety Impacts of Automated Driving Systems (joint with BTSCRP Research Report 2)

1002 Metropolitan Planning Organizations: Strategies for Future Success

1003 Guide to Alternative Technologies for Preventing and Mitigating Vehicle Intrusions into Highway Work Zones (and WOD 322)

1004 Federal Funding Uncertainty in State, Local, and Regional Departments of Transportation: Impacts, Responses, and Adaptations

1005 Motorcycle Crashes into Traffic Barriers: Factors Related to Serious and Fatal Injuries (and WOD 327)

1006 Guide to Understanding Effects of Raising Speed Limits (and WOD 328)

1007 Evaluation of Bonded Concrete Overlays on Asphalt Pavements

1008 Attracting, Retaining, and Developing the 2030 Transportation Workforce: Design, Construction, and Maintenance

1009 Shared Automated Vehicle Toolkit: Policies and Planning Considerations for Implementation (and WOD 331)

1010 In-Service Performance Evaluation: Guidelines for the Assembly and Analysis of Data (and WOD 332)

1011 Watershed Approach to Mitigating Hydrologic Impacts of Transportation Projects: Guide (and WOD 333)

1013 Roadside Barrier Designs near Bridge Rail Ends with Restricted Rights-of-Way: A Guide (and WOD 334)

1015 Performance Criteria for Retroreflective Pavement Markers

1016 Design Guidelines for Mitigating Collisions with Trees and Utility Poles (and WOD 336)

1018 Zone of Intrusion Envelopes Under MASH Impact Conditions for Rigid Barrier Attachments

1019 Quantifying the Effects of Implements of Husbandry on Pavements (and WOD 338)

1020 Investigation of Material Requirements for Highway Guardrail Systems

1021 Application of Dynamic Lane-Use Control: Proposed Practices

1022 Context Classification Application: A Guide

1023 Federal Funding Flexibility: Use of Federal Aid Highway Fund Transfers by State DOTs

1024 Evaluation of Bridge Rail Systems to Confirm AASHTO MASH Compliance

1025 Contingency Factors to Account for Risk in Early Construction Cost Estimates for Transportation Infrastructure Projects

NCHRP SYNTHESES

571 Load Rating of Bridges and Culverts with Missing or Incomplete As-Built Information

578 Use of Unmanned Aircraft Systems for Highway Construction

579 Subsurface Drainage Practices in Pavement Design, Construction, and Maintenance

580 Practices for Ensuring the Smoothness of Concrete Bridge Decks

581 Rehabilitation of Culverts and Buried Storm Drain Pipes

582 Highway Infrastructure Inspection Practices for the Digital Age

583 Implementation of Subsurface Utility Engineering for Highway Design and Construction

584 Visualization of Highway Performance Measures

585 Bridge Element Data Collection and Use

586 Use of Recycling Agents in Asphalt Concrete Mixtures

587 Use of Smart Work Zone Technologies for Improving Work Zone Safety

588 Design Practices for Rock Slopes and Rockfall Management

589 Automated Data Collection and Quality Management for Pavement Condition Reporting

590 Agency Use of Quality Control Plans for Administering Quality Assurance Specifications

591 Use of Safety Management Systems in Managing Highway Maintenance Worker Safety

592 Practices for Balancing Safety Investments in a Comprehensive Safety Program

593 3D Digital Models as Highway Construction Contract Documents

594 Technological Capabilities of Departments of Transportation for Digital Project Management and Delivery

595 Practices for Assessing and Mitigating the Moisture Susceptibility of Asphalt Pavements

596 Measuring Investments in Active Transportation When Accomplished as Part of Other Projects

597 Micromobility Policies, Permits, and Practices

NCHRP RESEARCH RESULTS DIGESTS

403 Program Management Insights for the Section 5310 Program, Including Subrecipient Consolidation and Urban 5310

NCHRP LEGAL RESEARCH DIGESTS

85 Public Liabilities Relating to Driveway Permits

86 Managing Enhanced Risk in the Mega Project Era

87 Encampments of Unhoused Individuals in Transportation Rights-of-Way: Laws and State DOT Practices

88 Consequential Damages Provisions in Construction Contracts: Legal Issues

NCHRP WEB-ONLY DOCUMENTS

298 Developing a Systematic Approach for Determining Construction Contract Time (and Research Report 979)

301 Development of Guidelines on Quantifying Benefits of Traffic Incident Management Strategies (and Research Report 981)

308 Methods for State DOTs to Reduce Greenhouse Gas Emissions from the Transportation Sector (and WebResource 1)

312 Enhancing Pedestrian Volume Estimation and Developing HCM Pedestrian Methodologies for Safe and Sustainable Communities (and Research Report 992)

315 Details of the Study on the Use of 0.7-in Diameter Strands in Precast Pretensioned Girders (and Research Report 994)

316 Human Factors Guidelines for Road Systems: 2021 Update

- Volume 1: Updated and New Chapters
- Volume 2: Conduct of Research Report

317 Developing a Guide for Managing Performance to Enhance Decision-Making (and Research Report 993)

318 Safety Prediction Models for Six-Lane and One-Way Urban and Suburban Arterials

319 Roadside Safety Analysis Program (RSAP) Update

320 Aligning Geometric Design with Roadway Context

321 Command-Level Decision Making for Transportation Emergency Managers (joint with TCRP WOD 75 and ACRP WOD 52)

322 Alternative Technologies for Mitigating the Risk of Injuries and Deaths in Work Zones: Conduct of Research (and Research Report 1003)

323 *Highway Safety Manual* User Guide

324 Guide to Implementation of the Toward Zero Deaths National Strategy on Highway Safety

325 Consideration of Roadside Features in the *Highway Safety Manual*

326 Design Guidelines for Test Level 3 Through Test Level 5 Roadside Barrier Systems Placed on Mechanically Stabilized Earth Retaining Walls

327 Serious and Fatal Motorcycle Crashes into Traffic Barriers: Injury Information (and Research Report 1005)

328 Safety Effects of Raising Speed Limits to 75 mph and Higher (and Research Report 1006)

329 Bonded Concrete Overlays on Asphalt Pavements: Resources for Evaluation (and Research Report 1007)

330 Accessibility Measures in Practice (and Research Report 1000)

331 Mobility on Demand and Automated Driving Systems: A Framework for Public-Sector Assessment (and Research Report 1009)

332 Multi-State In-Service Performance Evaluations of Roadside Safety Hardware (and Research Report 1010)

333 Watershed Approach to Mitigating Hydrologic Impacts of Transportation Projects (and Research Report 1011)

334 Roadside Barrier Designs near Bridge Rail Ends with Restricted Rights-of-Way: A National Survey and Testing Reports (and Research Report 1013)

335 A Guide to Computation and Use of System-Level Valuation of Transportation Assets

336 Proposed Guidelines for Fixed Objects in the *Roadside Design Guide* (and Research Report 1016)

338 Quantifying the Effects of Implements of Husbandry on Pavements: Appendices (and Research Report 1019)

340 Dynamic Curbside Management: Keeping Pace with New and Emerging Mobility and Technology in the Public Right-of-Way

346 Programmatic Issues of Future System Performance
349 Virtual Public Involvement: Lessons from the COVID-19 Pandemic

NCHRP WEBRESOURCES

1 Reducing Greenhouse Gas Emissions: A Guide for State DOTs (and WOD 308)

Transit Cooperative Research Program (TCRP) (online)

TCRP RESEARCH REPORTS

231 Recent Decline in Public Transportation Ridership: Analysis, Causes, and Responses (and WOD 74)
232 The Impacts of Vehicle Automation on the Public Transportation Workforce
233 Strategies for Deterring Trespassing on Rail Transit and Commuter Rail Rights-of-Way
- Volume 1: Guidebook
- Volume 2: Research Overview

234 Measuring and Managing Fare Evasion
235 Improving Access and Management of Public Transit ITS Data
236 Racial Equity, Black America, and Public Transportation, Volume 1: A Review of Economic, Health, and Social Impacts

TCRP SYNTHESES

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158 Cybersecurity in Transit Systems
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163 Considering the Unbanked in Cashless Fare Payment at Point of Service for Bus/Demand–Response Services
164 Bus Rapid Transit: Current State of Practice

TCRP LEGAL RESEARCH DIGESTS

58 Policing and Public Transportation
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TCRP WEB-ONLY DOCUMENTS

74 Recent Decline in Public Transportation Ridership: Hypotheses, Methodologies, and Detailed City-by-City Results (and Research Report 231)
75 Command-Level Decision Making for Transportation Emergency Managers (joint with NCHRP WOD 321 and ACRP WOD 52)

CRP Special Releases

TRB–FHWA Program Evaluation

1 Evaluation of the Asphalt Binder Quality Tester
2 Evaluation of the Exploratory Advanced Research Program
3 Evaluation of Ultra-High Performance Concrete Connections

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1 Available in print and online.

2 Entire series available in print and online.

3 Publications released since 2001 available in print and online.

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