NATIONAL ACADEMIES Sciences Engineering Medicine

TRB TRANSPORTATION RESEARCH BOARD

TRB Webinar: Enhancing Wheelchair Accessibility on Commercial Service Aircraft

September 25, 2023

2:00 – 3:30 PM

NOVEMBER 2022 UPDATE

PDH Certification Information

1.5 Professional Development Hours (PDH) – see follow-up email

You must attend the entire webinar.

Questions? Contact Andie Pitchford at TRBwebinar@nas.edu

The Transportation Research Board has met the standards and requirements of the Registered Continuing Education Program. Credit earned on completion of this program will be reported to RCEP at RCEP.net. A certificate of completion will be issued to each participant. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the RCEP.

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AICP Credit Information

1.5 American Institute of Certified Planners Certification Maintenance Credits

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Contact AICP, not TRB, with questions

AAAE Credit Information

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Purpose Statement

Presenters in this webinar will engage in a dialogue around considerations related to the ability of individuals to use their mobility devices when they fly. They will also share the economic, personal, and socio-cultural realities that use of wheelchairs and mobility aides have for passengers in airports and while on board.

Learning Objectives

At the end of this webinar, you will be able to:

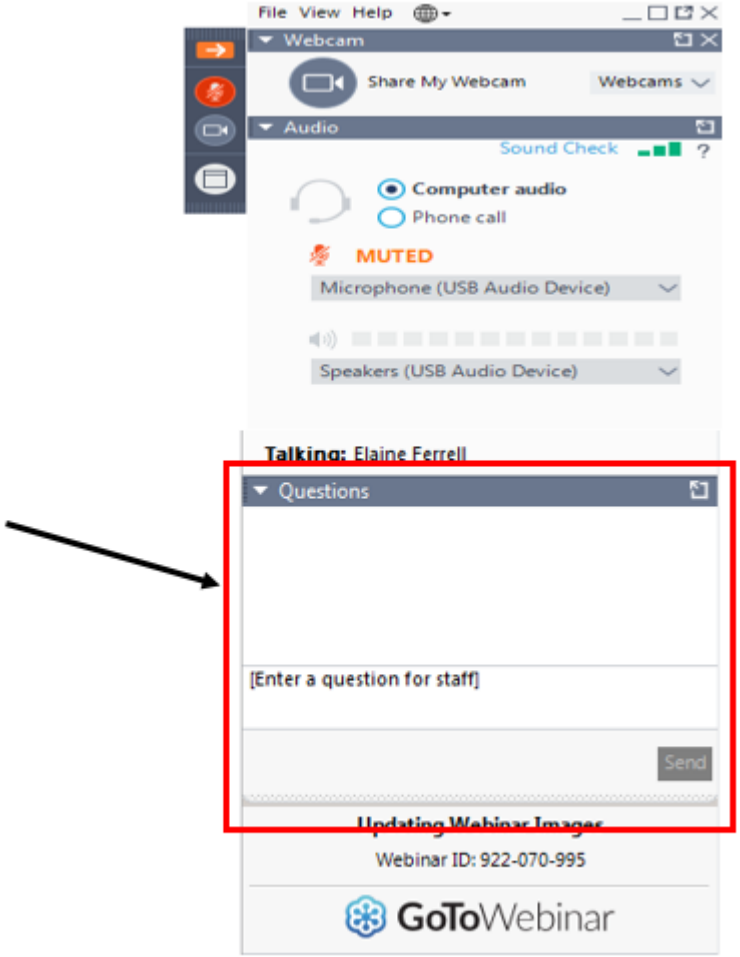
(1) Identify key issues and considerations related to the ability of passengers with disabilities to use their mobility devices onboard a passenger aircraft

(2) Share economic, personal, and socio-cultural benefits related to the ability of passengers with disabilities to use their mobility devices onboard a passenger aircraft

(3) Engage in information and resource sharing with professionals representing stakeholder organizations, the aviation industry, and government officials

Questions and Answers

- Please type your questions into your webinar control panel
- We will read your questions out loud, and answer as many as time allows



Today's presenters

Judy Shanley
jshanley@easterseals.com

Gary Weissel
gweissel@tronosjet.com

Heather Ansley
heathera@pva.org

Kelly Buckland
kelly.buckland@dot.gov

NATIONAL ACADEMIES *Sciences Engineering Medicine*

Paralyzed Veterans of America

Implications of Improving Accessibility for Air Travel Passengers with Disabilities

Heather Ansley, Esq., MSW
Chief Policy Officer

About Paralyzed Veterans of America

- Founded in 1946 by a band of service members who came home from World War II with a spinal cord injury.
- Focused on quality health care, research and education, benefits, and civil rights that maximize the independence of our members.
- Located throughout the country to serve veterans with spinal cord injury or disease and their families.
- Involved in efforts to improve accessibility in air travel for over 40 years.

Impact of the Air Carrier Access Act (ACAA)

- Signed into law in 1986.
- Prohibits discrimination in air travel based on disability.
- Requires airlines to: allow pre-boarding, provide timely boarding assistance, stow wheelchairs, and give appropriate seating accommodations.
- However, significant access barriers still remain.

Experience of Air Travel Passengers with Disabilities

- As part of the 35th anniversary of the ACAA, disability organizations, led by PVA, conducted an informal online survey about the experience of air travel passengers with disabilities.
- The survey took place in Fall 2021.
- Over 1,200 individuals responded across the disability and veterans communities.

A Few Words From Those Who Don’t Fly…

- “I am tired of getting dropped when transferring from my chair to the transfer chair on an airplane.”
- “I stopped traveling by air because the transferring to and sitting in airline seating is too hard on my body.”
- “…the risk of damage to my wheelchair is too great - my wheelchair is my legs, and if I arrive at my destination and find it damaged, there are serious consequences to me.”

Reasons for Avoiding Air Travel

- Your personal safety in transferring from your wheelchair to an aisle chair and into an aircraft seat.
  - 54% (559 respondents)
- Being unable to use the aircraft's lavatory (restroom).
  - 64% (647 respondents)
- Potential damage to your wheelchair.
  - 74% (763 respondents)

Experience of Passengers Using Aisle Chairs

- Of those who needed an aisle chair to board and deplane, many reported that such devices were difficult or unsafe to use, in disrepair, and not readily available for use when needed.
- Many also said they felt personnel were not adequately trained to assist them in using an aisle chair and felt unsafe using one.
- Unfortunately, 16 percent said they had been dropped, and 23 percent said they had been injured using an aisle chair.

Mishandled Wheelchairs and Scooters

- When a wheelchair is lost, damaged, or delayed, that is a significant and serious problem for the individual who relies on that device for their mobility, independence, and well being.
- Of those who travel with a wheelchair or scooter, almost 70 percent reported damage to the device. Nearly 56 percent experienced delays.

Progress Since the Survey?

- Despite a significant focus in the 2018 FAA Reauthorization on improving the safety and dignity of passengers with disabilities, the needle has barely moved.
- The percentage of wheelchairs and scooters mishandled in 2022 was the same as those mishandled in 2019.
- We continue to hear reports of lack of trained assistants in the boarding and deplaning process, broken and destroyed wheelchairs, and even threats to contact law enforcement when refusing to deplane because the passenger's wheelchair wasn't yet available.

Better Accessibility Means More Passengers

- Addressing accessibility concerns is required as a matter of equity, but it also makes good business sense.
- If the concerns could be addressed, about 76 percent of respondents would fly at least a few times a year.

Legislative Reforms Are Needed

- Barriers people with disabilities face are not adequately addressed in the ACAA or regulated by the U.S. Department of Transportation.
- No private right of action = no effective redress for grievances.
- Few aircraft accessibility features and little to no movement in the industry absent regulatory requirements.

Key Disability Provisions in the House FAA Bill

- Includes elements of the Air Carrier Access Amendments Act (ACAAA) (H.R. 1267) and the Mobility Aids On Board Improve Lives and Empower All (MOBILE) Act (H.R. 3082).
- Provides new training requirements for assisting passengers with limited mobility and properly stowing assistive devices.
- Reauthorizes the Air Carrier Access Act Advisory Committee.
- Focuses on the needs of passengers with disabilities in evacuations.
- Requires review of regulations related to lithium-ion battery powered wheelchairs and mobility aids.

Key Disability Provisions in the Senate FAA Bill

- The Senate bill also includes several similar disability-related provisions to those in the House bill, including elements of the MOBILE Act (S. 1459).
- The Senate bill also includes provisions related to onboard wheelchairs used to access a lavatory, research into safe and accessible air travel through the Advanced Materials Center of Excellence, and a grant program to improve airport accessibility.
- We support adding amendments based on the ACAAA (S. 545) that would improve the disability-related complaint process and improve disability access standards.
- Action on the bill has been delayed.

Items for Next FAA Reauthorization

- Congress must ensure that the final version of the FAA Reauthorization includes provisions that will ***meaningfully improve*** the air travel experience of passengers with disabilities.
- Such provisions include, at a minimum:
  - Increased training for workers,
  - Better data collection and analysis,
  - Improved complaint processing,
  - Continued study into the ability of passengers to fly while seated in their wheelchairs, and
  - Improved disability access standards.

Status of the Next FAA Reauthorization

- The current FAA authorization expires on September 30, 2023.
- Congress will either extend the current authorization or pass a new authorization.

Paralyzed Veterans of America

Questions?

Heather Ansley, Esq, MSW
HeatherA@PVA.org

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Summary Review - Study of the Feasibility of Wheelchair Restraint Systems in Passenger Aircraft

Presented by:
Gary Weissel
Managing Officer
Tronos Aviation Consulting

Sept 2023

Disclaimer

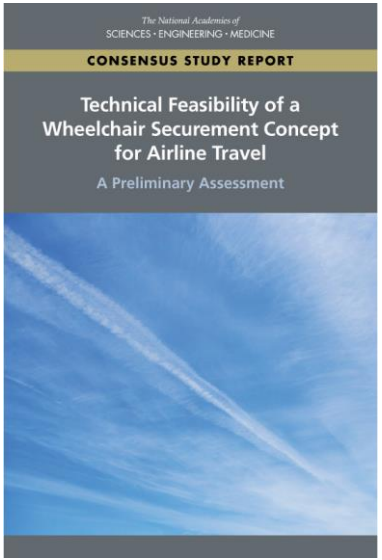
Although I participated in the NAS study, and will refer to results of the study herein, I have paraphrased (for ease of presentation) some of study results but have done my best to keep in line with the committee's final report and opinions.

Contents

1. Study Background
2. Study Scope
3. Summary Results
4. Study Findings and Recommendations

Study Background

- Study was mandated by FAA Reauthorization Act of 2018
- Sponsored by US Access Board
- Committee was issued a clear Statement of Work
- 12 committee members plus National Academy of Sciences (NAS) facilitation staff
  - Cross section of academia and industry participants
- Study ran from early 2020 to report release in Sept 2021
- Data gathering and study report were the results of
  - Multiple public meetings with presentations from industry stake holders
  - Research completed by committee members
  - Information provided to committee from key industry stake holders (some in response to committee member requests)
  - Extensive committee deliberations and discussions



Study Background - Committee Membership

- **Alan Jette (Chairman)** – Boston University (Sargent College of Health & Rehabilitation)
- **Naomi Armenta** – Nelson\Nygaard (transportation & mobility consultancy)
- **Peter Axelson** – Beneficial Designs, Inc. (rehabilitation engineering design firm)
- **Rory Cooper** – Univ of Pittsburgh (assistant vice chancellor School of Health and Rehabilitation Sciences)
- **Karen Erazo** – retired Sun Country Airlines (manager legal affairs)
- **Francis Heming Jr.** – independent consultant (aircraft seating, testing and certification)
- **Kevin Hiatt** – independent consultant (safety management systems and retired airline pilot)
- **Katherine Hunter-Zaworski** – Oregon State University (assoc prof School of Civil and Construction Engineering)
- **George Lesieutre** – Penn State University (assoc dean College of Engineering)
- **Miriam Manary** – Univ of Michigan (lead research engineer Bio Sciences Group UM Transportation Research Institute)
- **Clinton Oster Jr.** – Indiana Univ (former assoc dean School of Public and Environmental Affairs)
- **Gary Weissel** – Tronos Aviation Consulting (Managing Officer)

Feasibility Study Scope (1 of 4)

"The study will assess and evaluate the conditions under which it may be technically feasible to equip passenger aircraft with in-cabin wheelchair restraint systems"

a) Design, engineering, and safety requirements for installation and use of the in-cabin restraint systems….

b) Design, engineering and safety requirements for non-motorized and motorized wheelchairs to be used as passenger seats….

c) Injury criteria limits for the users of in-cabin wheelchair restraint systems and the occupants of seats behind and adjacent…

d) Implications of items (a), (b) and (c) on FAA regulations and policies for airworthiness, crash worthiness….

Source: Sunrise Medical

Feasibility Study Scope (2 of 4)

Through discussions with US Access Board (study sponsor), it was made clear the following items were "out of scope":

- Detailed financial costs and impacts to industry stake holders
- Emergency evacuation of wheelchair occupants
- Lavatory access for wheelchair occupants
- Use of wheelchair batteries during flight

Feasibility Study Scope (3 of 4)

Study evaluated three (3) key technical feasibility conditions:

1. Do airplanes common to airline service have enough doorway and interior space to accommodate entry, exit and maneuvering to and from a wheelchair securement space?
2. Are airplane floors and structures capable of accommodating the loads imparted by occupied electric wheelchairs (as the worst-case scenario [heaviest chairs])?
3. Can secured wheelchairs meet the crashworthiness, occupant injury protection and other relevant FAA/Safety criteria?

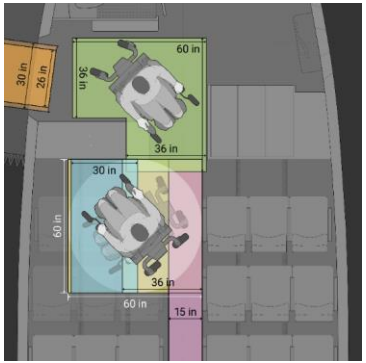
Feasibility Study Scope (4 of 4)

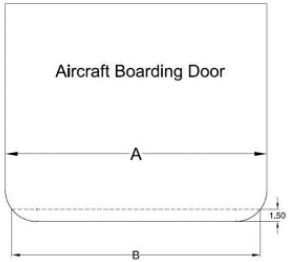
Additional Considerations:

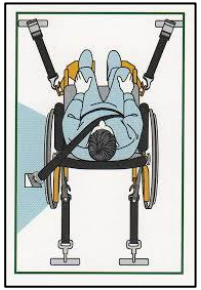
- Airline operational considerations
- Existing wheelchair designs / certifications
- Wheelchair owner impacts (financial costs of wheelchairs, ability to operate pressure relief [recline] functions in-flight, etc.)

Summary Results – Key Findings (1 of 3)

- Common air transport aircraft today have doors, entry ways and space adequate to allow entry of wheelchairs into and out of the cabin
  - ✈ Current min required aisle widths do not accommodate the vast majority of wheelchairs being able to transit up and down the aisle
- Approx 30”x 60” space will be required to allow wheelchair securement with a 4-point tie-down system (common transportation systems) and allow reclining of chair as medically necessary.
- Aircraft structure is capable of handling anticipated loads of in-cabin wheelchair

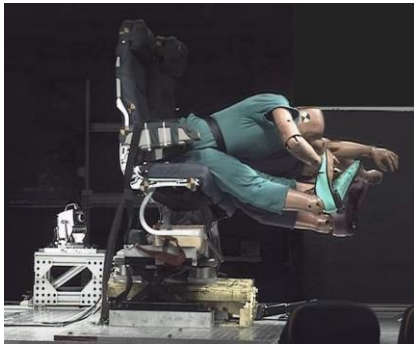






Summary Results – Key Findings (2 of 3)

- Many wheelchairs already comply with WC-19 (RESNA) transportation standards
- WC-19 has some similarity with FAA requirements but clearly there are significant gaps
- Further study is still required



Source: Univ of Michigan Transportation Research Institute

Summary of Results – Key Findings (3 of 3)

- Many key operational challenges must be addressed
  - How to ensure safe and proper usage of any securement system by passengers (and crew)
  - Provisioning of adequate passenger support and equal service treatment
  - Reasonable and reliable level of service throughout the fleet / network

Study Findings & Recommendations

- No design or engineering challenges were identified that were serious enough to call into question the technical feasibility of in-cabin wheelchair securement
- Substantial effort would be required to equip enough aircraft to provide meaningful levels of service
- Types of modifications required are of moderate complexity
- Further study is certainly warranted
  - US DOT, FAA and RESNA should establish program for further research wheelchair crashworthiness in accordance with FAA regs.
  - UMTRI (Univ Michigan) is currently engaged in multiple testing studies of both WC-19 wheelchairs and structural tie-down pallets and their capability to meet FAA structural and dynamic testing criteria
  - US Access Board should sponsor studies for likely travel demand

Tronos Aviation Consulting Inc.
Canada / USA / UK

THANK YOU

Gary Weissel

Managing Officer

PH: +1-678-439-9545

Mobile: +1-678-697-4764

Email: gweissel@tronosjet.com

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U.S. Department of Transportation:
Addressing Air Travel Accessibility

Kelly Buckland, Disability Policy Advisor

September 2023

DOT Disability Policy Priorities

Enable **safe and accessible air travel**

Enable **multimodal accessibility of public rights-of-way**

Enable **access to good-paying jobs and business opportunities for people with disabilities**

Enable accessibility of **electric vehicle charging** & **automated vehicles**

Reinvigorate **programmatic enforcement of the Air Carrier Access Act, Americans with Disabilities Act, Section 504 of the Rehabilitation Act, and Section 508 of the Rehabilitation Act**

Advance **diversity, equity, inclusion, and accessibility** in the DOT workforce

Address **gaps in data** on people with disabilities to inform policymaking

Ensure all **DOT meetings and resources are fully accessible** to people with disabilities

Priority: Enable Safe and Accessible Air Travel

*More than **24,000 wheelchairs** were damaged, delayed, or lost between January 1, 2019 and April 30, 2022. Enabling passengers to stay in their personal wheelchairs on aircraft will increase the safety and dignity of air travel and **increase access for travelers with disabilities**.*

Passengers can stay in their personal wheelchairs on aircraft, a generational improvement in the equity, safety, and dignity of travel	Develop and advance a research roadmap, building from the Access Board / TRB *Report on the Feasibility of Wheelchair Securement Systems on Passenger Aircraft*, to support future rulemaking
Decrease in number of passengers with disabilities whose wheelchairs are damaged during air travel and are injured in transfers to/from aircraft	Issue rulemaking on Ensuring Safe Accommodations for Air Travelers with Disabilities Using Wheelchairs
Passengers in wheelchairs can access lavatories on aircraft	Issue NPRM and Final Rule on Accessible Lavatories on Single-Aisle Aircraft: Part 2
Decrease in frequency of incidents where passengers' civil rights are violated and increase in equal access to quality air transportation service for persons with disabilities	Expand compliance and enforcement activities related to the Air Carrier Access Act and its implementing regulation in 14 CFR Part 382
	Educate people with disabilities about their rights under ACAA and how to exercise them

Research Roadmap

- In FY23, the Federal Aviation Administration (FAA) initiated a three-year research roadmap to investigate the feasibility of enabling passengers to stay in their personal wheelchairs while traveling on commercial aircraft.

- The research roadmap builds on the U.S. Access Board and Transportation Research Board's 2021 report, *Technical Feasibility of a Wheelchair Securement Concept for Airline Travel.*

- The research will evaluate occupant safety and crashworthiness aspects of installing wheelchair securement systems on commercial aircraft.

- This research will be used to inform potential future rulemakings to make air travel more accessible and safe for people with disabilities.

Research Roadmap Goals

1. Determine suitability of ISO/RESNA wheelchair standards as a basis for aircraft structural compatibility.

2. Evaluate and identify candidate restraint systems.

3. Report on aircraft considerations necessary to utilize suitable restraint systems, and wheelchair standards necessary for aircraft compatibility.

Additional Actions to Improve Air Travel Accessibility

- In July 2023, DOT announced a new rule to require airlines to make lavatories on new single-aisle aircraft more accessible to passengers with disabilities.

- In FY22, FAA awarded $1 billion in funding to increase airport capacity, energy efficiency, and accessibility. 73 of the 85 projects funded are specifically focused on providing greater access to people with disabilities.

Today's presenters

Judy Shanley
jshanley@easterseals.com

Gary Weissel
gweissel@tronosjet.com

Heather Ansley
heathera@pva.org

Kelly Buckland
kelly.buckland@dot.gov

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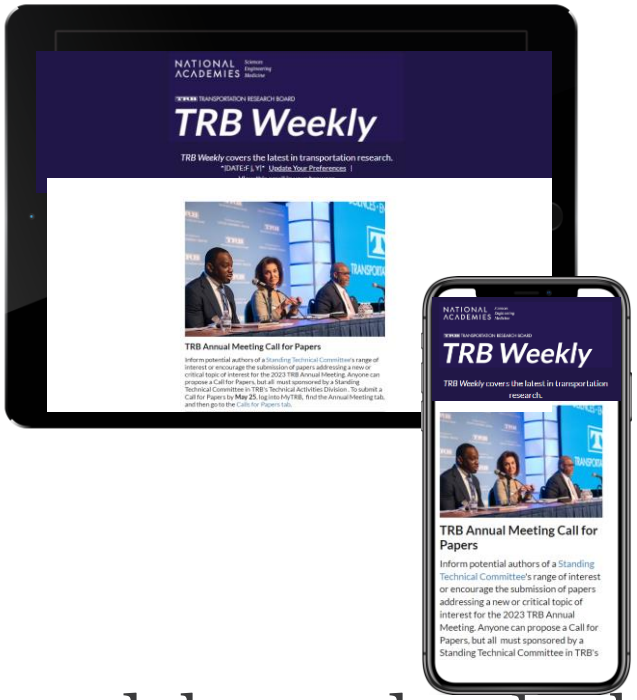

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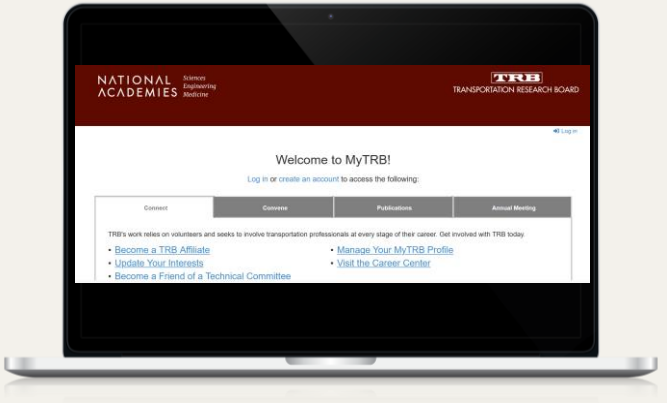

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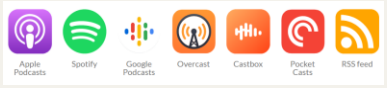

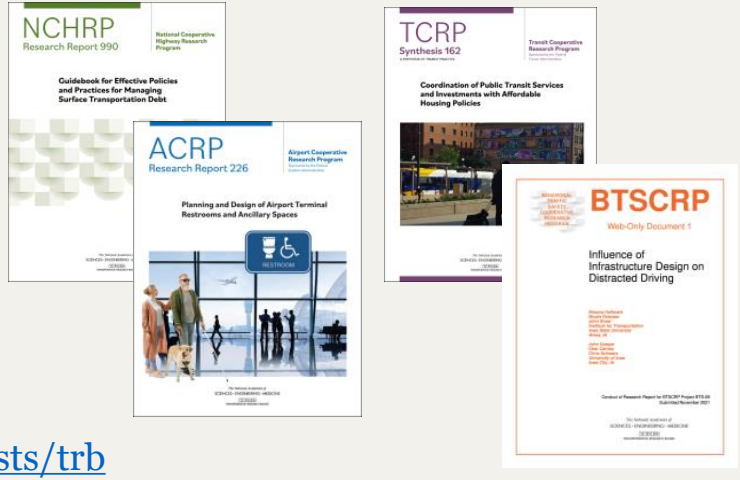

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