TRB Transit Data Committee

AP090
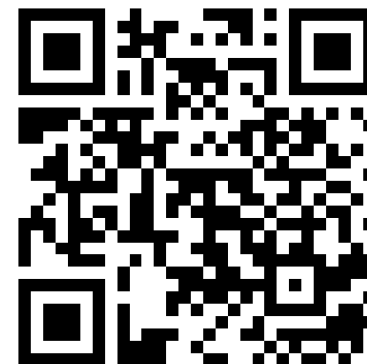Chair: Catherine (Kate) Lawson

TRB Transit Data Committee - AP090

Chair: Kate Lawson

	10A	11A	12P
00	**Welcome & Poll**	**Reconvene & Poll**	**Reconvene & Poll**
05	**Purpose and Outcomes**	**Liaison Reports:** G-18, SG-18, Health, FTA, AASHTO, TransitData; APTA - Covid Ridership Portal	**Research Update:** Kari (GaTech) University Research; Drew Dara-Abrams;
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50			
55	**Break**	**Break**	
	ADMIN	INTERACT	

Participant Survey

Point your phone camera at the image, then click the link

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How Did We Get Here?

- 2015 - Creation of Joint Subcommittee
  - Data Section ABJ00
  - Public Transportation Executive group AP000
- Workshops and annual subcommittee meetings
- 2021 - Transit Data Standing Committee: AP090
- Committee Scope: Focus on the use of foundational and emerging transit data

Image from NTD

Goals of Today's Meeting

- Confirm our interests and issues
- Chart way forward
- Identifying committee leadership
- Nominate research champions

Image from kypublictransit.org

Committee Cycle

Session Creation → Annual Meeting → Midyear Meeting → Call for Papers → Paper Review

Research Cycle

Project → Committee → Workshop or Task Team → Research Needs → Synthesis

Time Required for Different Participation Levels

Participation Type	Duration of Effort	Frequency of Effort
Workshop	2 years	monthly
Subcommittee	multiyear	biannual
Task Team	6 to 12 months	monthly
TCRP Synthesis	3 months (or 15 months)	bi-weekly
TCRP Full Proposal	24 to 30 months	monthly
AP090 Leadership	3 years	varies
Liaison	1 to 3 years	biannual
Young Member Coordinator	varies	monthly
Co-Committee Research Coordinator	3 years	monthly

Quarterly Status Update Call. First one, April 2021!

Research Needs Example

Champion: *(person)*	Ray Chan (With Rachel Dungca + Moyin Li)
Format:	TCRP [x] Task Force [ ] Subcommittee [ ] Workshop [ ] Other [ ] Research Paper [ ]
Research Question:	How do agencies organize and use data to communicate to decision makers?
Funding Options	TCRP Synthesis (Got funded as TCRP SG-18)
Why is it important?	It is important to help build a stronger data centric decision making method to allow transit agencies to train staff with best practices

Committee Participation Survey Results!

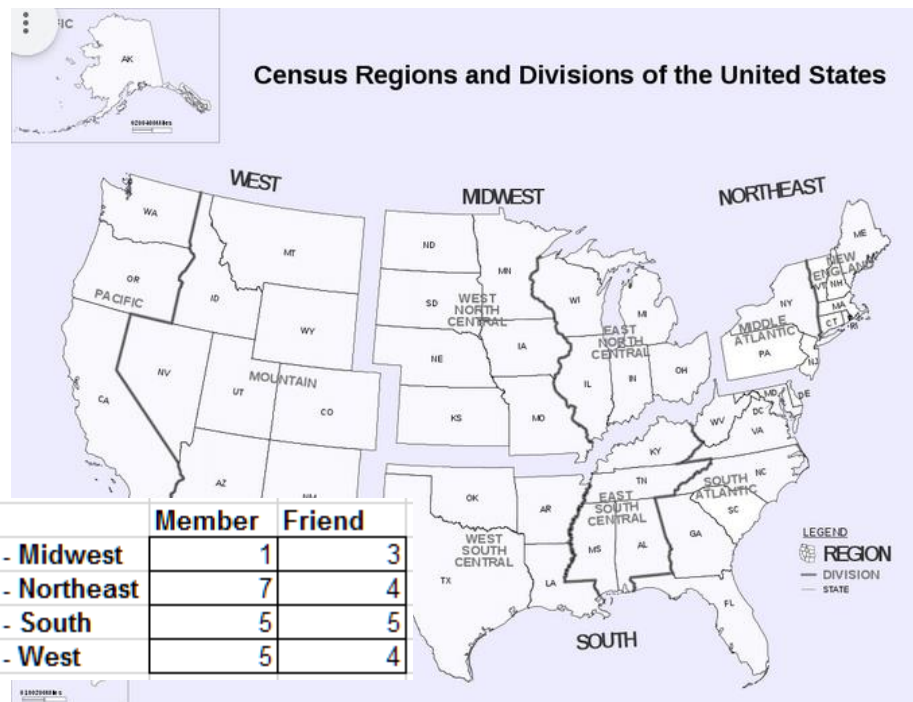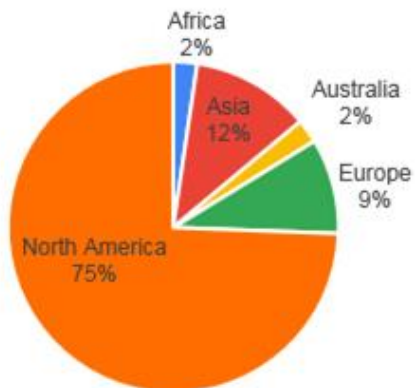Members and friends, who are we and how balanced are we WRT to TRB-stated diversity criteria for...

- Location/Geography
- Gender
- Minority Status
- Affiliation (agency, academia, government)

Location / Geography

	Member	Friend	Just curious	Grand Total
Africa	-	1	-	1
Asia	1	4	-	5
Australia	-	1	1	2
Europe	-	4	-	4
North America	18	14	4	36
Grand Total	19	24	5	48

Where Are You From?

Africa 2%
Asia 12%
Australia 2%
Europe 9%
North America 75%

Census Regions and Divisions of the United States

	Member	Friend
US - Midwest	1	3
US - Northeast	7	4
US - South	5	5
US - West	5	4

Gender Identity

	Member	Friend	Just curiou	Grand Total
Female	8	4	3	15
Male	11	20	2	33
Grand Total	19	24	5	48

Gender Identity

Female 28%

Male 72%
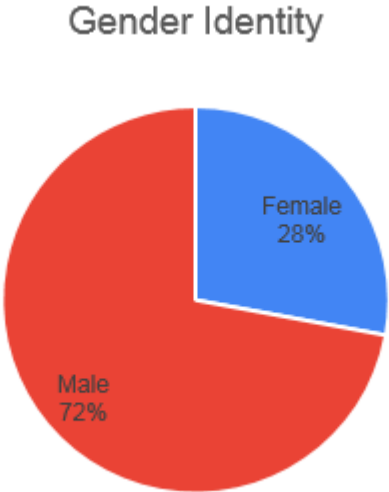
Minority Status

	Member	Friend	Just curious	Grand Total
Asian/pacific islander	3	5	-	8
Black/African	-	2	-	2
White/caucausian	16	16	5	37
(blank)	-	1	-	1
Grand Total	19	24	5	48

What is Your Race

- (blank) 2%
- Asian/pacific islander 19%
- Black/African 5%
- White/caucausian 74%

What is Your Race?

- Asian/pacific islander: 8
- Black/African: 2
- White/caucausian: 32
- (blank): 1
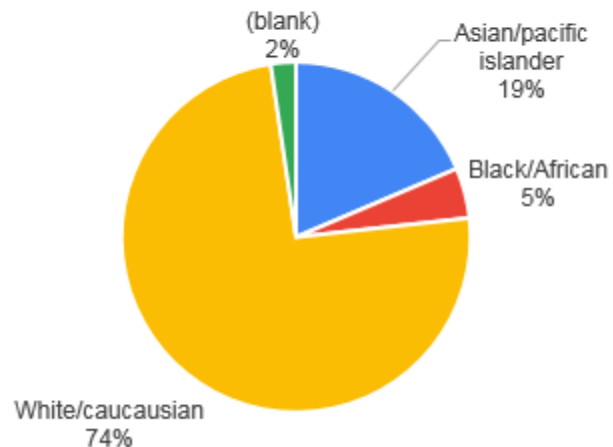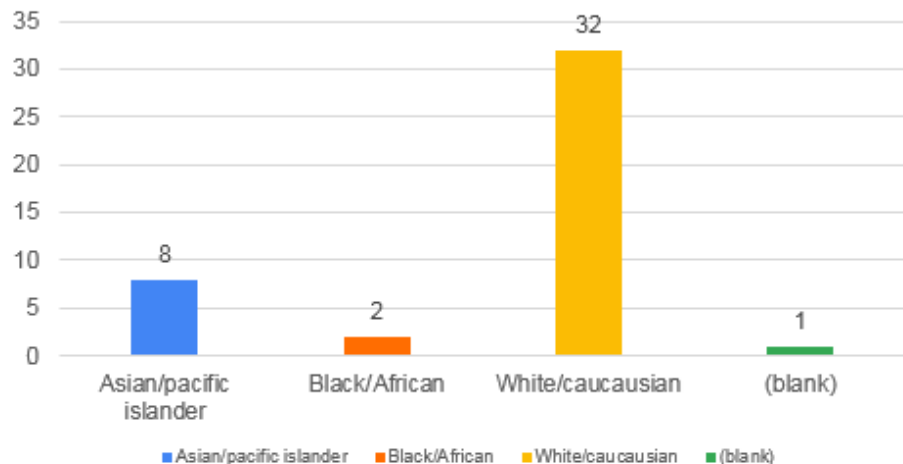
Organization Type

	Member	Friend	Just curious	Grand Total
Academic institution	8%	21%	4%	33%
Private industry	13%	17%	0%	29%
State/local government	4%	4%	0%	8%
Transit agency	8%	8%	4%	21%
Non-profit	6%	0%	2%	8%
Grand Total	40%	50%	10%	100%
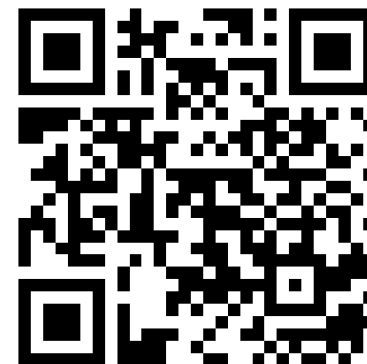
Organization Type

Non-profit 7%
Transit agency 19%
State/local government 9%
Academic institution 32%
Private industry 33%

Organization Type

Academic institution: 14
Private industry: 14
State/local government: 4
Transit agency: 8
Non-profit: 3

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Chair's Report: Committee Structure

- MyTRB - Official Registration of Membership and Friends
  - Keep your information accurate!
- Members: 24
- Friends: 51!!!!
- Recruitment (membership drive) to meet membership targets
  - Young member coordinator
  - Young members (<35 y/o)
  - Geographic diversity requirements
  - Increasing inclusion: race and ethnicity, ability
  - Membership is 3-year terms, renewable up to 3 times
  - Membership is rotated 1/3rd per year

Chair's Report: Paper Review Process

- 38 submitted papers
- 15 accepted for Poster Session (1331)
- 4 recommended for publication
  - MANY THANKS TO PAPER REVIEWERS!!!!!
- One session: Data Challenge
  - (You'll hear more during the liasons!)

- Need to develop paper review strategy

Chair's Report: PAPER REVIEW PROCESS

- Criteria
  - Overall Weighted Score
  - Average presentation score
  - "Camera-ready" quality
  - No "fatal flaws" identified

Special Award

TRB TRANSPORTATION RESEARCH BOARD

Certificate of Appreciation

Presented to

John Levin

In recognition of your outstanding leadership in the establishment and promotion of the Transit ITS Data Exchange Specification (TIDES) initiative and your continued support for state-of-the-art transit data analysis

Catherine Lawson
CATHERINE T. LAWSON, CHAIR
TRB TRANSIT DATA COMMITTEE

Stephen Andrle
STEPHEN J. ANDRLE
TRB STAFF REPRESENTATIVE

JANUARY 2021

The National Academies of
SCIENCES · ENGINEERING · MEDICINE

Chair's Report: Committee-Sponsored TRB Sessions

- Event 1446 - 3rd Annual Innovations in Transit Performance Measurement Challenge
  - (Fri) 1/29/2021 at 1:00PM - 2:30PM EST
- Event 1331 - Putting Transit Data to Work: Advancements in Making, Mixing & Matching, and Employing Machine Learning (ML) Techniques
  - (Wed) 1/27/2021 at 4:00PM - 5:30 PM EST

Other TRB Sessions

- LINC: An Algorithm for Linking Incidents to Rail Customer Delays Inspired by Traffic Flow Theory - M. Eichler (Thu) - 1/28/2021 10AM - 11:30AM EST

Committee Chair's Spotlight Partnerships Initiative

New Opportunities to Expand Transit Data Uses with New Partners

COMMUNITY LIFELINES
IMPLEMENTATION TOOLKIT

Comprehensive information and resources for implementing lifelines during incident response

FEMA

Version 2.0
November 2019

https://www.fema.gov/media-library-data/1576770152678-87196e4c3d091f0319da967cf47ffd9c/CommunityLifelinesToolkit2.0v2.pdf

Community Lifelines Defined

A CONSTRUCT FOR OBJECTIVES-BASED STABILIZATION EFFORTS

A lifeline enables the continuous operation of **critical government and business functions** and is **essential to human health and safety or economic security**.

Safety and Security	Food, Water, Shelter	Health and Medical	Energy (Power & Fuel)	Communications	Transportation	Hazardous Materials

- Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function

- Lifelines are the integrated network of assets, services, and capabilities that are used day-to-day to support the recurring needs of the community

- When disrupted, decisive intervention (e.g., rapid service re-establishment or employment of contingency response solutions) is required to stabilize the incident

Community Lifeline Components

Multiple components and subcomponents establish the parameters of the lifeline; component-level assessment is required to determine the condition of each lifeline.

1. Safety and Security
- Law Enforcement/Security
- Fire Service
- Search and Rescue
- Government Service
- Community Safety

2. Food, Water, Shelter
- Food
- Water
- Shelter
- Agriculture

3. Health and Medical
- Medical Care
- Public Health
- Patient Movement
- Medical Supply Chain
- Fatality Management

4. Energy
- Power Grid
- Fuel

5. Communications
- Infrastructure
- Responder Communications
- Alerts, Warnings, and Messages
- Finance
- 911 and Dispatch

6. Transportation
- Highway/Roadway/Motor Vehicle
- Mass Transit
- Railway
- Aviation
- Maritime

7. Hazardous Material
- Facilities
- HAZMAT, Pollutants, Contaminants

ASSESSMENT	
Status	"What?"
Impact	"So What?"
Actions	"Now What?"
Limiting Factors	"What's the Gap?"
ETA to Green	"When?"

Transportation

COMPONENTS AND SUBCOMPONENTS

Highway/Roadway/Motor Vehicle

- Roads
- Bridges

Mass Transit

- Bus
- Rail
- Ferry

Railway

- Freight
- Passenger

Aviation

- Commercial (e.g. cargo/passenger)
- General
- Military

Maritime

- Waterways
- Ports and Port Facilities

portation

y/Motor

Mass Transit

- Bus
- Rail
- Ferry

Freight

Passenge

FEMA

Search 🔍

Prepare for Disasters

Disasters & Assistance ⌄   Grants ⌄   **Floods & Maps** ⌄   Emergency Management ⌄

Cooperating Technical Partners Program

The Cooperating Technical Partners (CTP) Program is an innovative approach to creating partnerships between FEMA and participating National Flood Insurance Program (NFIP) communities, regional agencies, state agencies, tribes and universities that have the interest and capability to become more active participants in the FEMA flood hazard mapping program.

Historic Hazard Data
for Understanding Risk

HazardData.org   STORM EVENTS   SBA HAZARD LOANS   FEMA DISASTERS   DOWNLOAD DATA   METHODOLOGY

Losses in each County from Flooding, 1996-2019

$1M $5M $10M $100M $1B
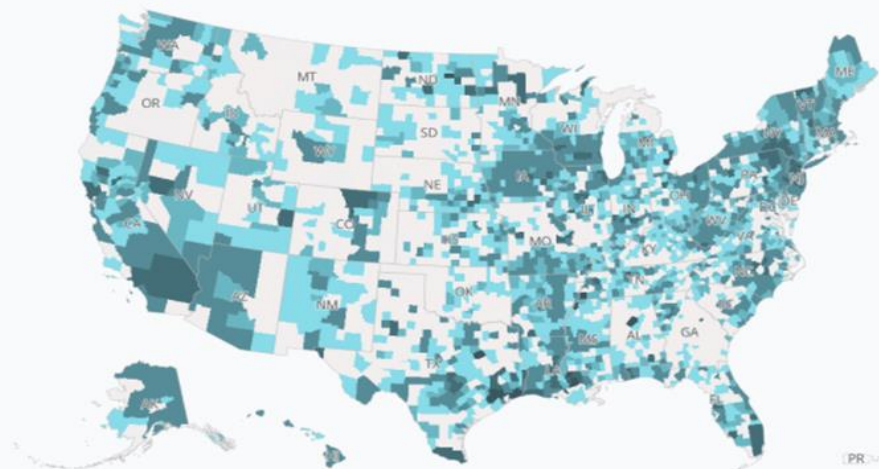
Storm Events Losses

HAZARD	DAMAGE-ALLTIME	YEARLY AVG DAMAGE	# EPISODES
Hurricane	$174.1B	$7.3B	1,012
Flooding	$153.1B	$6.4B	55,601
Coastal Hazards	$56.1B	$2.3B	3,052
Tornado	$32.8B	$1.4B	25,713
Wildfire	$31.8B	$1.3B	5,455
Hail	$29.7B	$1.2B	92,941
Drought	$29.6B	$1.2B	4,837
Wind	$23.3B	$971.4M	137,597
Coldwave	$7.7B	$318.8M	5,158
Ice Storm	$5.9B	$247.8M	1,842
Snow Storm	$5.7B	$238.8M	39,177
Landslide	$1.1B	$44.9M	823
Lightning	$923.9M	$38.5M	13,149
Heat Wave	$532.6M	$22.2M	3,668
Tsunami/Seiche	$149.5M	$6M	46
Avalanche	$4M	$171K	586
Volcano	$500K	$21K	35
Earthquake	$0K	$0K	0

https://www.hazarddata.org/

Download Data for Planning.

This page allows users to download natural hazard loss data at a variety of geographies including the NCEI Storm Events Data, the SBA Disaster Loans, and the FEMA Public Assistance and Individual Assistance datasets. Below you can find instructions for setting specific parameters to download the data that works for you.

National Data
To download national data simply the select the dataset of your choice and leave all filters unselected. Click export data.

County Data
You can pull any of the three datasets for any state or county the United States and Puerto Rico by using the State filter to select the state or county. You can also select the state first and the use the County filter to select all of the counties or a single county within that state.

Local Data
To download data at the municipal or census tract level, you must first select a county, then use the Geo Level filter to select Municipality or Tracts

Data Download

Data Set *
Severe Weather

State *
New York State

County
Sullivan County

Geo Level *
County

Hazards * ☑ Select All

☑ Wind	☑ Wildfire	☑ Tsunami/Seiche
☑ Tornado	☑ Flooding	☑ Lightning
☑ Landslide	☑ Ice Storm	☑ Hurricane
☑ Heat Wave	☑ Hail	☑ Earthquake
☑ Drought	☑ Avalanche	☑ Coldwave
☑ Snow Storm	☑ Volcano	☑ Coastal Hazards

⬇ Export Data

	A	B	C	E	G	H
1	County Name	Year	Hazard Type	Loss in $	# Events	
2	Sullivan County	1996	Flooding	8760000	4	
3	Sullivan County	1997	Flooding	0	0	
4	Sullivan County	1998	Flooding	0	1	
5	Sullivan County	1999	Flooding	0	1	
6	Sullivan County	2000	Flooding	2300000	4	
7	Sullivan County	2001	Flooding	0	0	
8	Sullivan County	2002	Flooding	50000	1	
9	Sullivan County	2003	Flooding	500000	1	
10	Sullivan County	2004	Flooding	35570000	5	
11	Sullivan County	2005	Flooding	10060000	3	
12	Sullivan County	2006	Flooding	100040000	6	
13	Sullivan County	2007	Flooding	300000	4	
14	Sullivan County	2008	Flooding	5000	2	
15	Sullivan County	2009	Flooding	32000	7	
16	Sullivan County	2010	Flooding	0	0	
17	Sullivan County	2011	Flooding	395000	5	
18	Sullivan County	2012	Flooding	90000	2	
19	Sullivan County	2013	Flooding	15000	3	
20	Sullivan County	2014	Flooding	480000	6	
21	Sullivan County	2015	Flooding	0	0	
22	Sullivan County	2016	Flooding	0	0	
23	Sullivan County	2017	Flooding	50000	1	
24	Sullivan County	2018	Flooding	25000	2	
25	Sullivan County	2019	Flooding	0	0	
26						
27						

Data Partnership Initiative

- Transit Agencies need to understand the nature of natural hazards in their system's geography to participate effectively in Community Lifeline responses.

  - FEMA's historical hazard data (hazarddata.org)

    - Types of hazard events by County (can be aggregated for multi-county transit systems)

    - Magnitude of event by Loss data

Data Partnership Initiative

- FEMA needs to know how our transit agencies can/do respond pre-, during, and post- event to conduct assessments for Community Lifelines.

  - Transit Data

    - Transit Stop Locations (GTFS)

    - Transit Routes (GTFS)

      - Current routing

      - Schedules

Potential Partnership Topics

- How can transit agencies assist in getting vulnerable populations to shelters?

- How can transit assist in getting these populations back home?

- What are the opportunities to propose hazard mitigation plan actions to reduce risk going forward for our communities using buses, rail, and ferries?

- What infrastructure needs (e.g., power storage for electric buses) should be located along Community Lifeline Corridors?

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Participant Survey

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Group Chair Report

- AP000 Public Transportation Group Chair: Brendon Hemily
- TRB Staff, Program Manager: Steve Andrle

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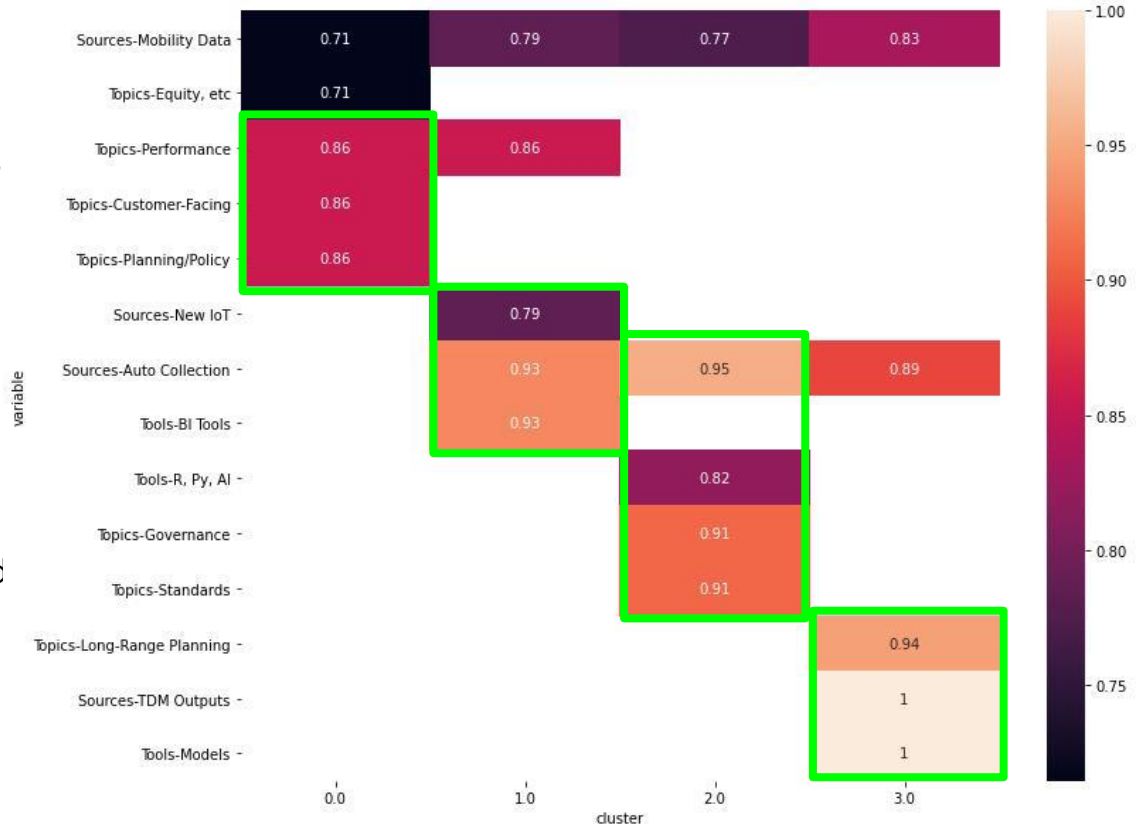|	10A	11A	12P
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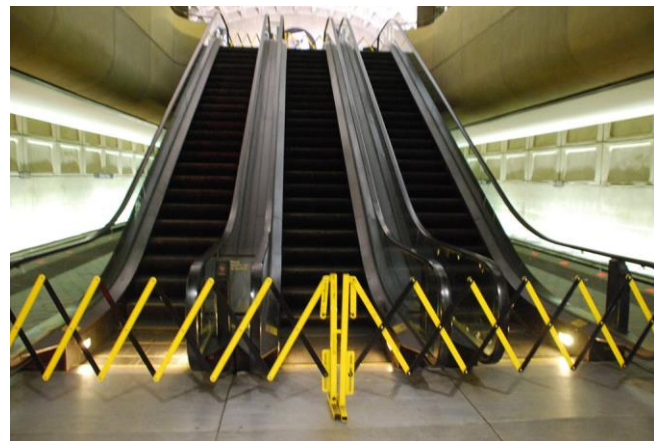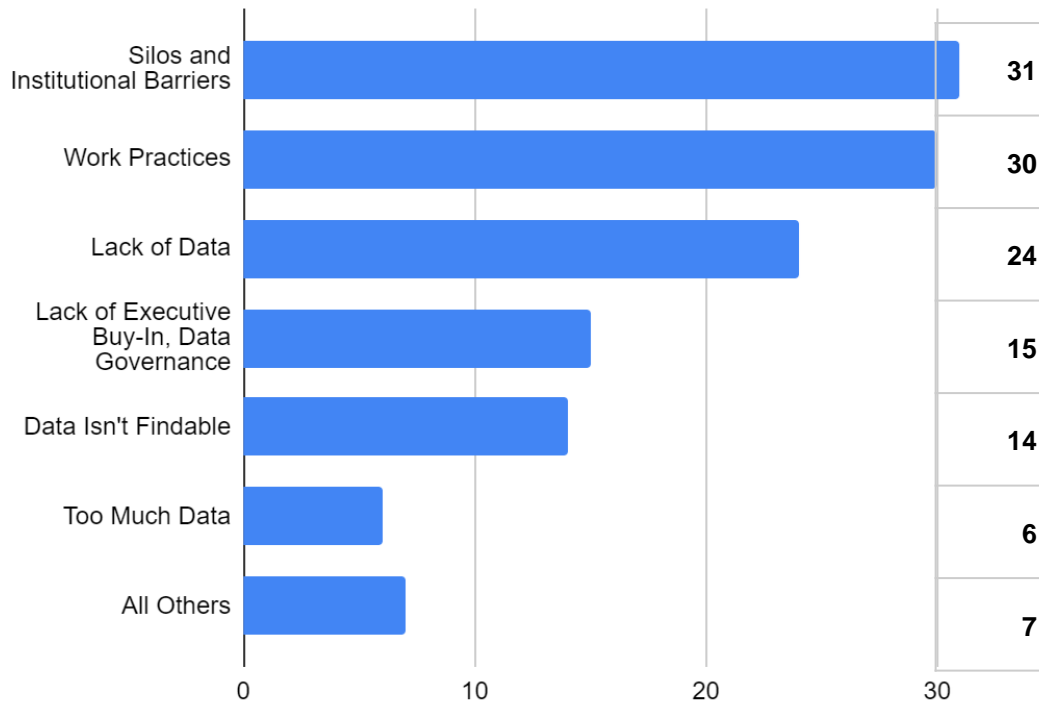
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Research Interests Clusters: Surveys

Clusters of Interests

- **Bread and Butter**: Equity, Performance, Customer-Facing data, planning and policy
- **Hummus and Pita:** Long range planning, models, model outputs
- **Business + Data**: Automatic data collection, New IoT data sources, BI Tools
- **Big Data Issues**: Emerging tools (Python/R & ML/AI); governance and standards

What barriers are you experiencing?

Barrier	Count
Silos and Institutional Barriers	31
Work Practices	30
Lack of Data	24
Lack of Executive Buy-In, Data Governance	15
Data Isn't Findable	14
Too Much Data	6
All Others	7

Over to Mentimeter

Breakout Topic 1: Work Practices and Skills

Clusters of Interests

- Cluster zero: Equity, Performance, Customer-Facing data, planning and policy
- Cluster one: Automatic data collection, New IoT data sources, BI Tools
- Cluster two: emerging tools; governance and standards
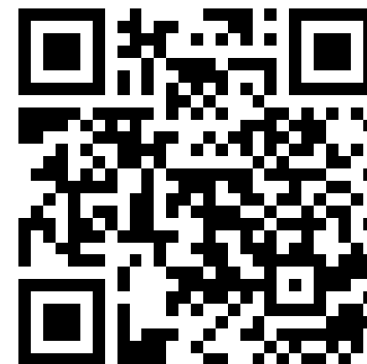- Cluster three: long range planning, models, model outputs

	TCRP	Workshop	Sub / Task Force	Other
Research Need 1				
Research Need 2				
Research Need 3				

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Innovations in Transit Performance Measurement Challenge

TRB Annual Meeting 2021

Friday, January 29 | 1:00-2:30PM EST

Sponsored by the Transit Management and Performance Committee and the Transit Data Committee, six finalists will present their innovative performance analyses, visualizations, and apps designed to support strong, data-driven decisions at our transit agencies. Presenters will answer attendee questions during a Q&A, and a winner will be announced at the end of the event.

TRB Online Program Search for "1446"

transitperformancechallenge@gmail.com

Official Challenge website

Liaison Report: TCRP Program Update

TCRP

TCRP Program
- Panel nominations for new projects -due on Friday, February 5, 2021
- Problem statements will be **due on 6/18/2021**
- Report 210 *Specifications for Demand-Responsive Transportation Development of Transactional Data*
- Report 213: *Data Sharing Guidance for Public Transit Agencies—Now and in the Future*

Synthesis Program
- Topic suggestions are due on March 19, 2021.
- Seven synthesis finishing up including Synthesis 153 *The Transit Analyst Toolbox: Analysis and Approaches for Reporting, Communicating, and Examining Transit Data* will be published by April 7, 2021.

TCRP Publications – Available at trb.org/tcrp

Webinars - sign-up @: https://webinar.mytrb.org/Webinars to participate

Annual Meeting – Please visit Exhibit Hall as described in the online program @ https://annualmeeting.mytrb.org/OnlineProgram/Details/14898

TCRP G-18 Improving Access and Management of Transit ITS Data
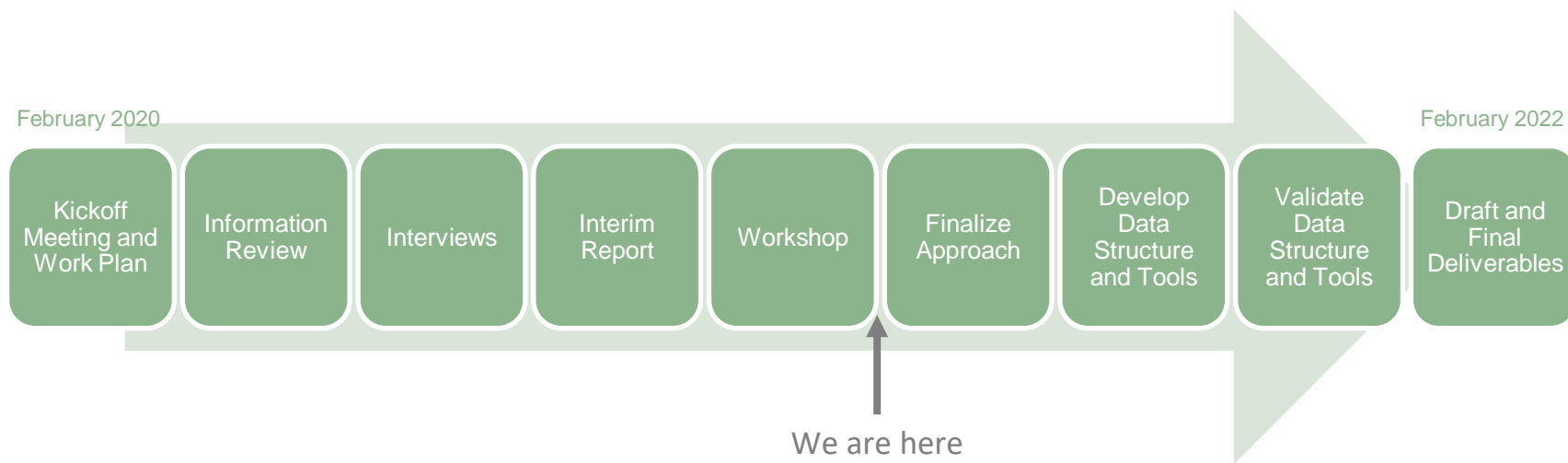
TCRP SG-18 Update: Transit Analyst Toolbox

- TCRP Synthesis SG-18:
  - **The Transit Analyst Toolbox: Analysis and Approaches for Reporting, Communicating, and Examining Transit Data**
- PI: Polly Okunieff
- Submitted Early 2019, Started Late 2019
- Met twice, once in person in late 2019, once virtually in mid 2020
- Currently in editorial review, out sometime in 2021
- Focused in on data governance as a key issue surrounding how transit agencies set up data for use throughout the organization
- Auxiliary focus on the tools that agencies use to analyze and present data
- Multiple case studies on different agency sizes/modes/how they got started
  - Some are top down/IT based, some are departmental based

NCHRP Task 105, Connecting Transportation and Health: A Guide to Communication and Collaboration – Research Products

⇨ Communications Guidebook and Tools

⇨ Recorded Overview Presentation

⇨ Presentation Slides with Speaker Notes

⇨ Summary Brochure

⇨ Project Summary Report

http://bit.ly/TransportationHealthCommunicationsGuidebook

Questions? Yaffe@YMobility.info

ENHANCING COMMUNICATIONS IN TRANSPORTATION & HEALTH

- Understand how transportation and health stakeholders can find common ground
- Discover which techniques may be most effective for communication, coordination and collaboration
- Find a wealth of tools and resources to support your efforts

Explore these topics and more in the forthcoming NCHRP 25-25 Task 105 "Connecting Transportation and Health: A Guide to Communication and Collaboration."

The information contained in this brochure was prepared as part of NCHRP Project 25-25/Task 105, National Cooperative Highway Research Program.

SPECIAL NOTE: This document IS NOT an official publication of the National Cooperative Highway Research Program, Transportation Research Board, National Research Council, or The National Academies.

CASPT and TransitData 2021: CASPT.org

The premier gathering for world's leading public transport participants from the academia, industry and government

- The 15th conference on Advanced Systems in Public Transport

- The 7th International Workshop and Symposium on Research and Applications on the Use of Passive Data from Public Transport

- 15 February: Deadline for extended abstracts (<1000 words)

Liaison Report: APTA IT Committee

(verbal update only)

Liaison Report: APTA

Matt Dickens
APTA Senior Policy Analyst

Liaison Report: Others

(verbal update only)

TRB Transit Data Committee - AP090

Chair: Kate Lawson

	10A	11A	12P
00	**Welcome & Poll**	**Reconvene & Poll**	**Reconvene & Poll**
05	**Purpose and Outcomes**	**Liaison Reports**	**Research Update**
10			
15	**Chair's Report**		
20			
25			
30			**Research Needs 3:** Silos and Institutional Barriers
35	**Group Chair Report**		
40	**Research Needs 1:** Work Practices, Skills	**Research Needs 2:** Data Doesn't Exist	
45			**Synthesis and Next Steps:** Where are we going, what are our priorities
50			
55	**Break**	**Break**	
	ADMIN	INTERACT	

Point your phone camera at the image, then click the link

We are here on the agenda

Breakout Topic 2: Data Doesn't Exist

Clusters of Interests
- Cluster zero: Equity, Performance, Customer-Facing data, planning and policy
- Cluster one: Automatic data collection, New IoT data sources, BI Tools
- Cluster two: emerging tools; governance and standards
- Cluster three: long range planning, models, model outputs

	TCRP	Workshop	Sub / Task Force	Other
Research Need 1				
Research Need 2				
Research Need 3				

TRB Transit Data Committee - AP090

Chair: Kate Lawson

	10A	11A	12P
00	**Welcome & Poll**	**Reconvene & Poll**	**Reconvene & Poll**
05	**Purpose and Outcomes**	**Liaison Reports:** G-18, SG-18, Health, FTA, AASHTO, TransitData; APTA - Covid Ridership Portal	**Research Update:** Kari (GaTech) University Research; Drew Dara-Abrams;
10			
15	**Chair's Report**		
20			
25			
30	**Research Needs 1:** Work Practices, Skills	**Research Needs 2:** Data Doesn't Exist	**Research Needs 3:** Silos and Institutional Barriers
35			
40			
45			**Synthesis and Next Steps:** Where are we going, what are our priorities
50			
55	**Break**	**Break**	
	ADMIN	INTERACT	

Participant Survey

Point your phone camera at the image, then click the link

We are here on the agenda

Over to Mentimeter

TRB Transit Data Committee - AP090

Chair: Kate Lawson

	10A	11A	12P
00	**Welcome & Poll**	**Reconvene & Poll**	**Reconvene & Poll**
05	**Purpose and Outcomes**	**Liaison Reports**	**Research Update**
10			
15	**Chair's Report**		
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25			
30			
35	**Group Chair Report**		**Research Needs 3:** Silos and Institutional Barriers
40	**Research Needs 1:** Work Practices, Skills	**Research Needs 2:** Data Doesn't Exist	
45			**Synthesis and Next Steps:** Where are we going, what are our priorities
50			
55	**Break**	**Break**	
	ADMIN	INTERACT	

We are here on the agenda

GA Tech Update: T-SCORE

- New 18 month $1 million USDOT university transportation center

- <u>*Vision*</u>*: To define a set of **strategic visions** that will guide public transportation into a **sustainable and resilient future**, and to equip local planners with the **tools** needed to **translate their chosen vision into their own community**.*

- Possible Strategies:
  - Transit as a social service
  - Consolidation into high-volume, capacity-constrained corridors
  - Integrated on-demand multi-modal transit
  - Pricing and incentives
  - COVID-19 recovery strategy

- Please get in touch to hear more:
  - Website: http://tscore.ce.gatech.edu
  - Email me: Kari.Watkins@ce.gatech.edu
  - Twitter @transitmom
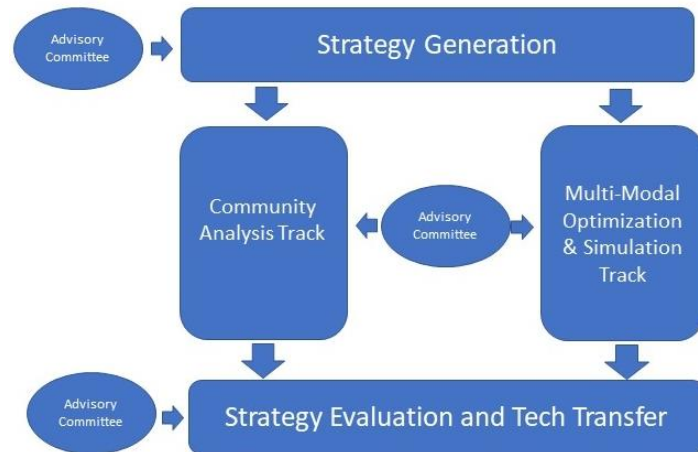
✕ Interline

GTFS and GTFS Realtime Platform Updates — 2020

CUTR CENTER FOR URBAN TRANSPORTATION RESEARCH

UNIVERSITY OF SOUTH FLORIDA

Transitland Version 2.0
New Global Map and APIs
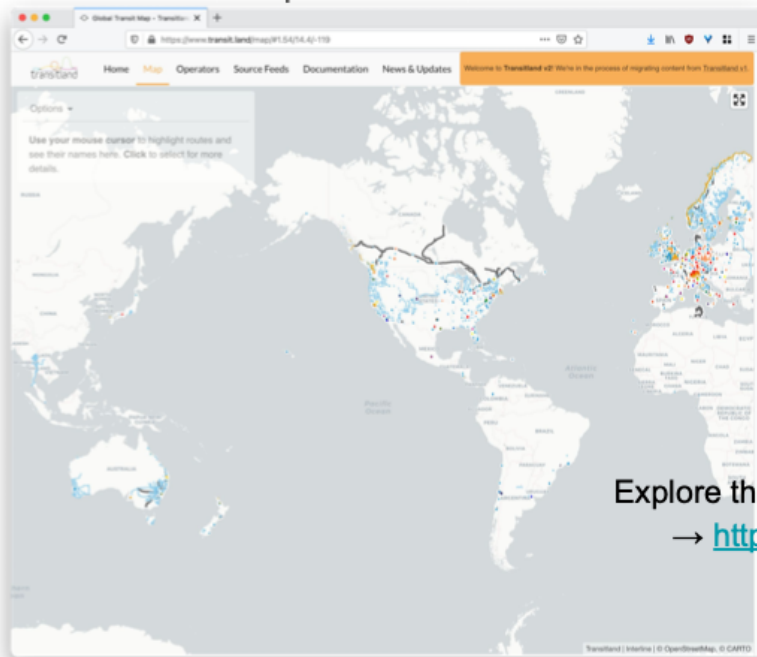
Explore the global transit map
→ https://transit.land/map

Add your agency
→ info@interline.io

An Open Platform for Transit Agencies to Improve the Quality of Their Real-Time Data
[TCRP J-04/IDEA 93]

Transitland GTFS Realtime Validator Platform

Validation Report: Overview

Feed a-c20-trimet   Sample Period 2020/02/06

← return to index to change feed or sampling period

VehiclePositions

| # OF TIMES SAMPLED 5,780 | START OF SAMPLING PERIOD Thursday, February 6th 2020 12:00 AM UTC | END OF SAMPLING PERIOD Thursday, February 6th 2020 11:59 PM UTC |

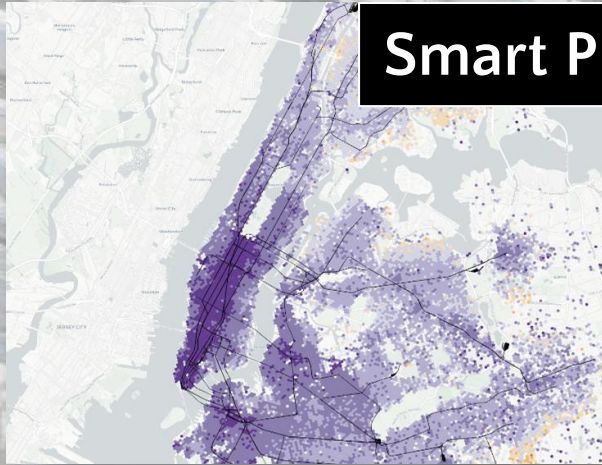| Severity	Description	Click Description to View Issue Details	# of Times Detected	% of Times Detected
Error	Invalid header.gtfs_realtime_version		5780	100 %
Error	GTFS-rt stop_id does not exist in GTFS data		4927	86 %
Error	GTFS-rt trip_id does not exist in GTFS data		651	11 %
Error	GTFS-rt route_id does not exist in GTFS data		249	4 %
Error	Vehicle position far from trip shape		99	2 %
Error	GTFS-rt header timestamp decreased between two sequential iterations		1	0 %
Warning	schedule_relationship not populated		5780	100 %

Read the TRB report →
http://www.trb.org/Main/Blurbs/181415.aspx
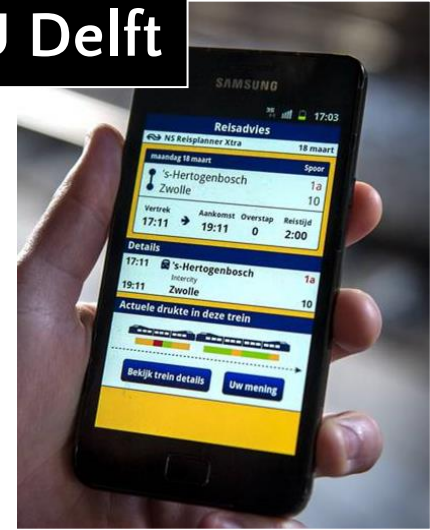
Express interest in next phase →
info@interline.io

Smart Public Transport Lab @ TU Delft

o.cats@tudelft.nl
SmartPTLab.TUDelft.nl

Ferry Safety:
Digitizing our way out of disaster

Safety Issues and Digital Solutions

- Overcrowding– CCTV pax count, load line
- Untrained crew – e-learning – digital assessment
- Leadership skills Simulations and AR assessment of individuals and teams. Video analytics
- Vessel quality – remote surveys
- Weather – Monitor installation – data analysis

Worldwide Ferry Safety Association www.ferrysafety.org
Roberta Weisbrod, ferrysafety@gmail.com

TRB Transit Data Committee - AP090

Chair: Kate Lawson

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55	**Break**	**Break**	
	ADMIN	INTERACT	

We are here on the agenda

Over to Mentimeter

Breakout Topic 3: Silos and Barriers

Clusters of Interests
- Cluster zero: Equity, Performance, Customer-Facing data, planning and policy
- Cluster one: Automatic data collection, New IoT data sources, BI Tools
- Cluster two: emerging tools; governance and standards
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	TCRP	Workshop	Sub / Task Force	Other
Research Need 1				
Research Need 2				
Research Need 3				

TRB Transit Data Committee - AP090

Chair: Kate Lawson

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50			
55	**Break**	**Break**	
	ADMIN	INTERACT	

Participant Survey

Point your phone camera at the image, then click the link

We are here on the agenda

Synthesis

Next Steps, Brainstorming - Edit in Real Time

(notes here)

Time Required for Different Participation Levels

Participation Type	Duration of Effort	Frequency of Effort
Workshop	2 years	monthly
Subcommittee	multiyear	biannual
Task Team	6 to 12 months	monthly
TCRP Synthesis	3 months (or 15 months)	bi-weekly
TCRP Full Proposal	24 to 30 months	monthly
AP090 Leadership	3 years	varies
Liaison	1 to 3 years	biannual
Young Member Coordinator	varies	monthly
Co-Committee Research Coordinator	3 years	monthly

Quarterly Status Update Call. First one, April 2021!

Fin.
return 0;