

Urban Transportation Data & Information Systems Committee
Transportation Research Board Committee ABJ30
3-Year Strategic Plan 2018 - 2020
Revised: January 2018

Section 1 - Scope and Introduction:

This committee is interested in the design, collection, analysis, and reporting of transportation supply and demand data and the information systems needed to support the application of that data in urban and metropolitan transportation planning efforts. In particular, the committee is interested in:

- New and innovative techniques for measuring and monitoring the performance of metropolitan transportation systems;
- Impacts associated with changes in demographic and urban travel behavior characteristics;
- Effective use of primary (household and other transportation surveys) and secondary (census and other federal, state, local and passive data sources) data;
- Advancements in information systems and information technology for improved dissemination and sharing of knowledge about metropolitan transportation systems and urban travel behavior, including the role of big data; and
- Common standards and appropriate recommendations to support the interchange and archiving of information and data.

This Committee oversees five active subcommittees

Census Data for Transportation Planning (ABJ30(1)) - <http://www.trbcensus.com/>

Co-chairs: Clara Reschovsky, Bureau of Transportation Statistics, and Mara Kaminowitz, Baltimore Metropolitan Council

Big Urban Data (ABJ30(2))

Co-chairs: Kristin Tufte, Portland State University, and Mecit Cetin, Old Dominion University

Health and Transportation Joint Subcommittee (ADD50, ADD40, ADB10, ABJ30) -

<http://www.trbhealth.org/home>

Co-chairs: Ed Christopher, Consultant, and Mike Widener, University of Toronto

Bike and Ped Data Subcommittee, ABJ35(3) - <https://sites.google.com/site/bikepeddata/home>

Chair: Sarah O'Brien, North Carolina State University

Travel Time, Speed & Reliability Subcommittee, ABJ30(3)

Chair: Michael Fontaine, Virginia DOT

Section 2 - Mission:

The mission of the ABJ30 Committee is to provide resources, support and guidance to enhance, enable, and advance the state of the practice with regard to the design, collection, analysis, and reporting of transportation supply and demand data needed to support urban and metropolitan transportation planning efforts.

Section 3 - Urban Data Issues:

We are entering a critical juncture in the area of urban transportation data and information systems.

- On the supply side, traffic volume, speed and congestion data are obtained using a mix of old--loop detectors, sensors, video cameras--and new--blue tooth, GPS, connected and autonomous vehicle (CAV), transportation network company (TNC)--technologies. This data is being repackaged and enhanced by private sector providers, leading to the emergence of “big data” to support urban transportation planning efforts. The aging infrastructure will undergo further strain as agencies seek to implement technologies to support connected and automated vehicles and establish data governance to aid in the massive amounts of data anticipated to sustain and support these new operating systems. At the same time, agencies are capturing data regarding non-motorized and non-auto travel to support a variety of planning, health, and policy related initiatives. Agencies are also exploring open data initiatives and public-private partnerships to leverage the value of the data generated by the system. Beyond monitoring activities to private transport, the diffusion of new services such as shared mobility and carpooling is generating additional amounts of data that can be exploited for better understanding urban mobility.
- On the demand side, researchers have observed changing travel patterns associated with changing demographics, emerging technologies, evolving land use patterns, and changing economic conditions. Transportation officials in urban areas are seeking to better understand these trends in order to improve the long-range planning processes and identify appropriate policy measures. Travel demand modelers are wrestling with methods to better capture and forecast these changes, as well as leverage big data now becoming available. The cost of collecting data using traditional means (census, travel survey programs) is skyrocketing, while research programs to investigate how emerging technologies could help support those programs are under-funded and slow in producing timely guidance. Crowdsourcing to have an instant feedback of travel conditions and gamification of on-the-fly travel surveys through apps (possibly coupled with GPS traces from the same device) are two examples of data sources that will probably play a role in the near future.
- The information systems currently in use by urban transportation agencies were not developed to meet demands for responsiveness and flexibility. The strain of the volumes of data being generated needs to be addressed, but within the context of the yet unknowns associated with the forthcoming automated and connected vehicle systems.

Section 4 - Goals

1. **Provide Leadership, Guidance and Support to our Community**

The members of ABJ30 are recognized experts in a variety of topic areas to support the supply, demand, and information system challenges faced by urban areas. Our primary committee goal is to provide leadership, guidance and support as agencies seek to leverage limited funds to maximize their data programs and infrastructure needs.

2. **Identify, coordinate and facilitate timely and relevant research**

The world of urban transportation data and information systems is moving at a rapid and disjointed pace. Technology is emerging faster than funding cycles support the necessary research to make informed deployment decisions, when there is sufficient funding to conduct that research. Our second committee goal seeks to identify, coordinate and facilitate timely and relevant research to aid urban areas make crucial decisions.

3. Compile and Communicate Lessons Learned and Best Practices

During this time of rapid change, the committee seeks to serve as a central repository and communicator of lessons learned and best practices.

4. Facilitate Cross-Cutting Research and Outreach Efforts

Given the depth and breadth of knowledge to support urban transportation efforts, our subcommittees play a crucial role in connecting with relevant committees and industry groups to identify need, generate research and communicate the results to the community at large. Our goal is to support and grow our subcommittees to achieve these objectives, and at the appropriate time, support and champion their evolution to full committee or task force status or seek to replace the topical focus to ensure we are meeting the community needs.

Section 5 - Strategic Initiatives:

The Committee will undertake strategic initiatives to help achieve the foregoing goals. These initiatives aim to continue and enhance the work and responsibilities of the Committee.

- A. Continue to identify research needs emanating from the active subcommittees and coordinate the development of peer-reviewed research needs statements with higher probability that they will be funded by committee members or co-sponsors.
- B. Leverage subcommittees to develop partnerships, co-host educational activities, and develop calls for papers
- C. Continue to leverage committee member knowledge through involvement on research panels
- D. Maintain wide and effective communication of research findings, best practices, ongoing research and related information
- E. Start and maintain dialogues with industry groups (TMCs, CAV manufacturers) with “proprietary” data
- F. Maximize and enhance opportunities for internal Committee coordination and communication

The following matrix identifies how the Committee envisions each strategic initiative to support the four Committee goals.

Committee Goals	Strategic Initiatives					
	A	B	C	D	E	F
1. Provider leadership, guidance and support to our community	✓	✓	✓	✓	✓	✓
2. Identify, coordinate, facilitate timely and relevant research	✓	✓	✓		✓	✓
3. Compile and communicate lessons and best practices		✓		✓	✓	✓
4. Facilitate cross-cutting research and outreach efforts	✓	✓	✓	✓	✓	✓

Section 6 – Research Topics:

For this strategic plan, the following topics were identified as priority focus for the committee. This list will be reviewed and updated at least annually.

- Institutional issues – licensing, ownership
- Accessing and working with proprietary data sources (CAV, TNC, etc.)
- Urban Big Data
- Arterial data – flows, speeds, volumes (issue call for papers)
- Data fusion/integrate – to generate performance measures
- Big Data tools and applications for travel times and speeds
- Crash data for bike/ped, merge with physical infrastructure data to evaluate bike/ped investments
- Employment datasets
- Integration of Open Data/Big Data with Census data
- Arterial and health task force
- Cost/benefit of health outcomes

Appendix A. Committee History: Membership, Publications, and Sponsorship Activities

The Urban Transportation Data & Information Systems Committee has an active group of 35 members representing State Department of Transportation (DOT) Agencies, Other Federal and Urban Governmental Transportation Agencies, University Researchers, and Consultants working in the broad field of urban transportation data and information systems. Below is a summary of the Committee's membership, publications, and sponsorship activities.

Membership

Membership in the Urban Transportation Data & Information Systems Committee is diverse in terms of organization, geography, and topic. This diversity allows representation of various perspectives in discussions so that committee decisions may be more broadly applicable and appropriate. As part of the 2016 Strategic Planning activities, the committee recognized the need for more involvement by urban areas and the private sector. This resulted in the current committee membership representation (January 2018) comprising:

- Federal – 4 members
- State – 4 members
- Local/Regional -8 members
- International – 2 members
- Academia – 8 members
- Consultants – 8members
- Emeritus – 1 member

The topic of urban transportation data and information systems spans a great number of subtopics. This has led to strong connections and interactions among multiple Committees, as well as the co-sponsorship of joint subcommittees. The members of ABJ30 are associated with 20 different TRB committees and task forces, providing a strong liaison service across multiple sections of TRB.

- ABE90 – Transportation in the Developing Countries
- ABJ10 - National Transportation Data Requirements and Programs
- ABJ20 – Statewide Transportation Data and Information Systems
- ABJ32T – Task Force for Using Census for Transportation Conference
- ABJ35 - Highway Traffic Monitoring
- ABJ40 - Travel Survey Methods
- ABJ45T - Task Force on Understanding New Directions for the NHTS
- ABJ70 - Artificial Intelligence and Advanced Computing Applications
- ADB40 - Transportation Demand Forecasting
- ADB50 - Transportation Planning Applications
- ADD50 - Health and Transportation
- ADD55T – Task Force on Arterials and Public Health
- AHB20 - Freeway Operations
- ANF20 – Bicycle Transportation
- AP015 - Transit Capacity and Quality of Service
- AP025 – Public Transportation Planning and Development
- AP060 - Paratransit

Urban Transportation Data & Information Systems members were also actively involved in supporting the cooperative research program, serving as panel members for the following research efforts:

- D03107 - NCHRP Project Panel on Work Zone Capacity Methods for the Highway Capacity Manual
- D0861 - NCHRP Project Panel on Travel Demand Forecasting: Parameters and Techniques
- D0866 - NCHRP Project Panel on Trip-Generation Rates for Infill Land Use Developments in Metropolitan Areas of the U.S.
- D0895 - NCHRP Project Panel on Using Cell Phone Data to Improve Travel Demand Models
- D08108 - NCHRP Project Panel on Developing National Performance Management Data Strategies to Address Data Gaps, Standards, and Quality
- D1784 – NCHRP Pedestrian and Bicycle Safety Performance Functions for the Highway Safety Manual
- STSB30 – Synthesis of Current Practices in Providing Demand-Response Transit
- TG16 - TCRP Project Panel on Development of Open Data Standards for Demand Responsive Transportation Transactions
- NCHRP 08-36, Task 129 “Scoping Study to Establish Standards and Guidance for Data for Transportation Purposes”
- NCHRP 08-36, Task 135 “Addressing Margins of Error in Small Areas of Data Delivered through the American Fact Finder or the Census Transportation Planning Products Program”

In addition to serving on research panels, it is important to note that committee members are actively involved in the cooperative research program through conducting the research projects.

Publications

For TRB 2018, the committee received 62 papers at the full committee level. This does not include papers managed by the various subcommittees. Of the 62 papers received, ten were asked to be revised and resubmitted for publication.

For TRB 2017, the committee received 43 papers at the full committee level. This does not include papers managed by the various subcommittees. Of the 43 papers received, four were approved for publication.

For TRB 2016, the committee received 44 papers at the full committee level. This does not include papers managed by the various subcommittees. Of the 44 papers received, five were approved for publication.

For TRB 2015, the committee received 30 papers at the full committee level. This does not include papers managed by the various subcommittees. Of the 30 papers received, two were approved for publication.

For TRB 2014, the committee received 42 papers at the full committee level. Of those papers received, six were accepted for publication.

Sponsorship Activities

ABJ30 was an active sponsor of multiple activities during the TRB annual meetings and mid-year meetings in conjunction with NATMEC conferences. Below is a summary of each activity.

2018 annual meeting

- Workshop 152 – State and Local Safety Data Integration
- Workshop 153 – Big Data Applications and Methods
- Podium 200 – Applications and Characteristics of Probe-based Travel Time Data
- Poster 308 – Innovations in Urban Data and Mobility Modeling
- Podium 403 – User Demand and Data Supply: Big Data and Travel Behavior
- Podium 471 – Smart Transportation: Getting Organized
- Podium 527 – Generation Next: The Future of Multimodal Travel Behavior Data
- Poster 634: New Research on Travel Time, Speed, and Reliability Data
- Podium 738 – Freight versus Life? How to Collect and Differentiate Freight Data and Household Travel Data in an Age of E-commerce
- Podium 840 – Private Data and Public Interest: Access to Data for Understanding Transportation Network Company Impacts in Urban Areas.

2017 conference - Applying Census Data for Transportation: 50 Years of Transportation Planning Data Progress (November 14-16, Kansas City, Missouri)

2017 annual meeting

- Workshop 107 “Harnessing the Power of Transportation Data for Understanding Travel Behavior”
- Workshop 109 “Big Data Analytics in Transportation”
- Workshop 141 “Analyze This! A Dynamic Planning Workshop”
- Workshop 158 “Quality Volume Data for Bicycling and Walking”
- Poster Event 207 “Sensing Technology Innovations in Multimodal Transportation”
- Poster Event 357 “Innovations in Urban Transportation Data”
- Poster Event 358 “New Research on Travel Time, Speed, and Reliability Data”
- Poster Event 357 “Innovative Big Data Solutions for Transportation Challenges”
- Podium Session 515 “Putting the Transportation and Health Tool to Work”
- Podium Session 609 “Smart Accessibility for Smart Cities”
- Podium Session 773 “Big Data Innovations for Big Decisions”
- Podium Session 822 “Travel Data User’s Forum – Data: What difference does it really make?”

2016 Annual Meeting

- Workshop 109 - Big Data Analytics in Transportation
- Poster 357 - Innovations in Urban Transportation Data
- Poster 358 - New Research on Travel Time, Speed, and Reliability Data
- Poster 359 - Innovative Big Data Solutions for Transportation Challenges
- Session 773 - Big Data Innovations for Big Decisions
- Session 822 -Data: What Difference Does It Really Make? (Travel Data User’s Forum)

- Mid-year Meetings – In addition to regularly scheduled annual meetings during the TRB conferences, the committee met on in conjunction with the 2016 NATMEC conferences. In addition, the committee met virtually in 2017. An in-person mid-year meeting is planned for 2018.

APPENDIX B.

2016 Strategic Analysis and Discussion

At the 2016 Annual Meeting, members of ABJ30 held a discussion to refresh the triennial strategic plan and focus future committee activities. In advance of the meeting, committee members were surveyed to identify strengths, weaknesses, opportunities and threats. The following is a summary of key themes that emerged from survey responses, as well as summary notes from the annual meeting discussion.

ABJ30 SWOT Survey - Summary

Q1. Strengths of ABJ30

- Membership is
 - diverse,
 - enthusiastic, and
 - well-versed
- Good coverage of topics
- Connected with other committees
- Urban data is important, relevant, and evolving

Q2. Weaknesses of ABJ30

- The committee's scope is too broad, which leads to:
 - Lack of focus, especially on truly urban topics
 - Redundancy with, and less visibility than other committees
- Not enough research statements generated
- Too many subcommittees, or at least need to be more focused
- Possible gaps in representation:
 - Top level scientists
 - Private sector
 - End users

Q3. Opportunities for ABJ30

- Automated and connected vehicle data*
- Big Data*
- Data integration (ex. Public/private, Big/traditional)
- Research about data (management, quality, security)
- Library/catalog as resource for users and researchers

*Should work with private sector firms

Q4. Threats to ABJ30

- Not connected/coordinated with the right TRB committees or external groups interested in the same data
- Spread too thin to be effective
- Risk being absorbed into other committees, need to stake our claim

- Lack of understanding and focus on linkages between data collection, analysis, and communication

ABJ30 Strategic Planning Discussion (Thursday, January 12, 2016)

Held a conference call to discuss the plan and conducted a survey for SWOT to collect information from members. 13 responded out of 35 members. Include PPT slides.

How can we remain broad and provide focus? Inventory rest of section to see if any topics are better covered elsewhere. How should we handle new/big data sources? We could select a few topics each year to focus on, in addition to our subcommittee focus. Our paper review coordinator should delegate papers to subcommittees or other committees where appropriate (with lead time). There is a new Big Data committee and we should coordinate.

How can we generate new research statements? Subcommittees should discuss and bring forward research ideas.

Shared document editing would facilitate coordinating research statements and other documents (google docs).

Consider adding a subcommittee for committee business, such as paper review or research statements.

Opportunities – working with private sector firms on big data and AV/CV, big data subcommittee focused on data integration research statement, need DOT champion for these statements (we have 5 DOT members), bring in computer scientists to help with data integration

Threats – coordinate and partner with other committees and external groups, data gathering is not done efficiently at DOTs

Notes from 2017 Annual Meeting

- a. Triennial Strategic Plan Update – Jim Hubbell
 - Have a refreshed and updated final draft of the TSP available – just minor changes, minor additions, minor content updates.
 - TSP will be circulated to sub-committee chairs for final reviews. Next TSP is not due till 2018.
 - TRB requires an Action Plan for what is being planned for the next 12 months → will be prepared from the TSP and need to have clear strategies/steps. Need to get it done asap.
 - TRB to provide link to other committee's action plans for ABJ30 to review.
 - Action Item from TSP: Need a person to focus on internal communications, roster