ACP70 Mid-Year Meeting

Summary of Proposed Research Ideas

1. **Traffic Monitoring Program Management**

   A. Emerging Trends Regarding Privatization of Traffic Monitoring Programs

   - Update emerging trends related to complete or partial privatization of Traffic Monitoring Programs. GDOT and SCDOT both have instituted a “pay-for-data” approach, so checking in on how that has gone would be meaningful to others. Compare to the typical “in-house" approach?

   B. Benchmarking Traffic Monitoring Program Outputs

   - What are common ways that DOTs can evaluate program outputs related to staffing levels, number of CCSs, road miles evaluated, and associated costs?

   C. Performance Metrics for Traffic Monitoring Programs

   - What metrics should be used to evaluate a Traffic Monitoring Program? Operational readiness of CCS, for example. Alaska DOT tracks at least four measures of data submission.

   D. Evaluating Network Data Completeness

   - Quantify data completeness across the agency network where there aren’t necessarily counters for validation.

   E. Traffic Monitoring Data Privacy and Security

   - How is privacy and security being addressed/accounted for in data collection? Should public agencies be putting requirements on the vendors and 3rd parties? Will privacy issues eliminate any current data sources being relied on?

   F. Integration and Utilization of Traffic Data Among Agencies

   - How can all data being collected by the state agency and partners be integrated and utilized? Could possibly be a synthesis study to document what has and has not worked in terms of data wrangling.

   G. Traffic Data as a Source of Public Agency Revenue

   - Have any states charged others for their data? Is there a market for this? VDOT has explored, but not pursued. Tech companies are utilizing the free data to generate products that are sold.

   H. Benefit-Cost of Non-Traditional Traffic Data Collection

   - How can a DOT demonstrate the value of shifting to non-traditional methods for collecting data (e.g., safety, cost)? Is there benefit to an enterprise approach? How does a vendor’s data fusion approach compare to one that is built by the agency?

2. Short/Long-Term Count Programs

A. Utilization of Fixed and Portable Speed Detection Signs for Count Data

- Can speed detection signs (fixed and/or portable) be utilized for count data? At least one sign vendor sells their data.

B. Procedure to Determine the Accuracy of Permanent Traffic Data Collection Equipment

- Existing ASTM standards need to be updated to address new technologies and techniques. The accuracy of permanent equipment needs to be verified since it is often used as the benchmark for other equipment. 3rd party data providers also use these for validation of their projections. There is an existing RNS that begins to address this issue, so this could be a following phase. This topic is important for bike/ped/micromobility too, but could be a separate RNS.

3. **Managing Large Traffic Datasets**

A. 3rd Party Traffic Data Ownership

- Who owns the data when purchased from a 3rd party? Each vendor has their own agreement language. If a state agency purchases data and posts it for public consumption, why should another agency that needs the same data go and purchase it? Eastern Transportation Coalition has been dealing with, and possibly trying to address, this issue.

B. Exploring Issues with "Official" Traffic Data Conflicting with Secondary Sources

- Confusion on what data is the official data, with AADT given as a primary example. Estimates submitted to FHWA are "official" and everything else is ancillary, but there is a concern of people shopping around for an AADT estimate from other sources that meets their need.

C. Developing Traffic Data Dictionary (Synthesis)

- Need for a common data dictionary (e.g., AADT vs. ADT)

D. Traffic Data Conflation Procedures (Synthesis)

- Methods and best practices of conflation as a synthesis study. Some agencies seem to have figured it out, with many problems occurring in complicated geometry, such as an interchange. Eastern Transportation Coalition may have a related project.

4. Traffic Monitoring and Performance Measures

A. Re-Examining FHWA Definition of Peak Hours Post-COVID

- Post-Covid paradigm shift of when congestion peak periods start and end. Examine changing peak hour definitions in FHWA MAP-21, and adjust performance measures.

B. Evaluation of Pedestrian Utilization and Safety at "Kiss and Ride" Facilities

- Kiss and ride facilities are intended to be used for commuters to be dropped off to wait for a bus. However, there is some evidence that these facilities are being used for the start of pedestrian and cycling trips, which could cause safety issues and performance. Counting with cameras facilitates this type of analysis and can be evaluated at various locations across the country.

C. Weight Enforcement Performance Measures from WIM Data

- Use WIM data to develop weight enforcement performance measures for state police and other agencies performing enforcement. Need to account for permitted overweight loads.

D. Examining Alternate Travel Routes During Planned and Unplanned Road Closures

- Examine alternate routes taken during planned and un-planned workzones. Are oversize/overweight vehicles taking routes they shouldn't be?

E. Equity Bias in Vendor Data Used for Transportation Decision-Making

- Geographic footprint of various 3rd party vendor APIs might present equity issues for planning/safety/etc. projects utilizing the data for transportation decision-making. Equity issue is likely related to rural vs. urban communities or other marginalized communities, such as low income with lower or lack of IoT tech these vendors rely on.

5. Pavement Engineering Applications

A. Quantifying Impact of Trucks on Pavement Performance at Intersections

- Evaluate impact of pavement performance around signalized intersections. For example, rutting often occurs in top 3" of asphalt due to stationary and accelerating/decelerating large vehicles.

B. Traffic Data Guidebook

- Develop a guidebook to illustrate different uses of available traffic data. Would be a synthesis study.

C. Development of an Accurate Portable WIM System

- There is (and has been) a strong need to develop an accurate portable WIM system. This is a challenging problem to solve, but shouldn't deter from finding a solution.

D. Evaluation of Wheel Wander in Lane for Pavement Design Input

- Quantify wheel wander in lanes across various road types and geometries. This can be used as an input to pavement design, but also could inform automated vehicle algorithms to strategically position heavy vehicles in lanes to prolong pavement life.

E. Lift Axle Compliance and Impacts on Pavement Design

- Study of lift axles and whether they are truly "down" versus visually appearing down, and what impact this has on pavement performance.

F. Integration of 3rd Party Truck Transponder Data to Obtain Weight Data

- Integrate 3rd party truck transponder data to gain more detailed weight data. This could possibly be a solution for portable WIM. Is it possible for commercial vehicle static weights to be communicated securely to roadside equipment that isn't vendor proprietary?

6. Data Quality and Equipment Calibration

A. Use of Advanced Analytics to Assess Data Quality

- Review and evaluation of any promising data analysis technologies that use artificial intelligence, deep learning, and other advanced techniques to assess data quality.

B. Traffic Monitoring Equipment Preventative Maintenance Practices

- What sort of preventative maintenance is being performed by agencies to ensure equipment is functioning? For example, is anyone load-testing their batteries? Could be a synthesis study.

C. Impact of Measuring Reference Weight Truck on Platform Scales

- WIM calibration trucks are often weighed at static platform scales, but it is rarely performed on an axle-by-axle basis. This limits the calibration activity.

D. Benefit-Cost Analysis of Sensors with Proactive Health Alerts

- Many vendor systems provide alerts when a sensor may be going bad based on passive testing. This allows a problem to be quickly identified and addressed. What is the value of utilizing these systems (over systems that do not have them), in terms of up-time and data quality?

7. Integrating Traffic Counts with Alternative Data Sources

A. Obtaining Traffic Monitoring Data from Alternative Data Sources

- How can traffic data from alternative data sources be leveraged? What is the quality and for what uses is the data good enough? This continues to be an evolving area, so periodic updates would be valuable. Could be a possible synthesis study.