

Average Vehicle Occupancy Detection

The Association for Commuter Transportation believes in the idea that transportation performance measures should be more about measuring people rather than counting cars alone. Traditionally, most data collected related to highway performance has been on the number, speed, and distance of vehicles travelling on our nation's highways. These are important data points, but when considering the goal of a transportation system is to move people and goods, they cannot be the only data relied upon.

Fiscal, physical, environmental, and practical purposes require planners, engineers and policy makers to think differently now. We must get the most out of our existing transportation system. In some way, it does mean taking steps to get more cars through a particular point more efficiently. However, more importantly, we need to focus on getting more people through our transportation system more efficiently. However, the data that is collected and used today places the emphasis on the vehicle and not the people. Why? Put simply, collecting data on vehicles is easier than measuring people throughput. As famed management consultant Peter Drucker so succinctly said, "What gets measured, gets managed." ACT believes we should not avoid what is the true purpose of transportation – to move people and goods - for what is easy. We risk having it wrongly interpreted as "what can't be measured isn't worth managing".

The National Online Dialogue clearly identified "person throughput" and multi-modal travel to be important performance measures. ACT believes the necessary data can be collected on a nationally consistent basis and that the cost will be more than offset by better, more cost-effective decision making, and greater leveraging of dwindling transportation resources.

The purpose of this paper is to identify possible ways for data to be collected on average vehicle occupancy and travel modes. None of the methods below is perfect, but perfect should not be the enemy of effective.

ACT believes DOT should focus on establishing people throughput as one of the key performance measures, assist stakeholders in testing the methods to collect the data, and perhaps more importantly, invest in research on improving methods for collecting this data. To that end, ACT and its members stand ready to assist DOT. In particular we are looking to our members for examples and opportunities to improve the methods described below and will be in contact with DOT on possible research and development ideas specifically related to performance measures.

- 1. Automated Vehicle Occupancy Detection** – Over the past several years, great advances have been made in the field of automated vehicle occupancy detection. This has been the result of an increased number of HOT lanes and other facilities that exempt HOV's from paying a toll. While the technology is still evolving, it is possible to convert and deploy technologies such as infrared cameras that can accurately determine the number of occupants in a vehicle.

Positives:

- Can be easily deployed anywhere
- Focus on corridors and specific NHS routes
- Automated and Accurate (*becoming increasingly accurate as technology evolves)

Negatives:

- Technology still evolving
- Deployment of technology will have capital, operating, maintenance costs that some may claim are too high (however we would disagree)
- Privacy concerns (including potential use in citations and enforcement)
- Does not count people who bike, walk, and work from home (which also results in a safety benefit)

- 2. American Community Survey** – “The American Community Survey (ACS) is an ongoing statistical survey that samples a small percentage of the population every year -- giving communities the information they need to plan investments and services” – US Census. Included in that data is a great deal of information on how people commute. The information is collected on an annual basis and has a high statistical dependency. The information can be broken down to a variety of geographic and demographic levels, but could not be used on an individual corridor level.

Positives

- Provides statistically dependable data for a state or a region on a yearly basis and smaller geographic units over a multiyear basis
- Data is already collected and would require almost no investment by stakeholders to utilize
- Easy to quantify

Negatives

- Cannot be utilized to identify performance of a specific NHS route or corridor
- Expresses what percentage of people use transit, carpool, or walk/bike but does not give a 'per-capita' per vehicle
- Focuses exclusively on commute to work trips; efforts such as “school pools” are uncounted
- Considers only “usual” mode. (e.g., drive alone 4 days and telework one day per week would be reported only as drive alone)

- 3. Corridor Surveys** – Some counties, MPOs, employers and groups such as transportation management organizations and commuter assistance programs conduct surveys that analyze commuting habits. Much like the American Community Survey, this data could help develop a picture of how people are commuting. By requesting addresses of travelers' to and from commuting patterns, impacted routes can be analyzed.

Positives

- Similar survey's are being conducted in areas across the country and could easily be replicated
- No Geographic impediments: this method could be deployed in areas of varying populations

Negatives

- Response rates are typically low. Statistical issues may arise
- Some will claim its cost-prohibitive (again we would disagree)
- In areas where more than one NHS route is an option for a commuter, it would be tough to specifically identify performance of a single NHS route (i.e., Alexandria to DC, options include US 1 and I-95).
- Would not account for other traffic (freight, interstate travel) or trip substitution (e.g., telework)

- 4. Other Existing Measures Including NTD Data** – States, counties, MPOs and other organizations collect a variety of other data that could be easily used or transformed to be used towards determination of performance. One example would be data submitted via National Transit Database being submitted by transit agencies. The data includes information about how transit passenger trips and in many communities includes the number of vanpool passengers. This data can be determined for a specific NHS route as well as time of day.

Positives

- Data is already being collected
- Can be used to determine per capita on a specific route

Negatives

- Does not incorporate carpoolers, teleworkers, bikers, or walkers
- Not all vanpool groups are included, generally only those vanpools that are directly operated or purchased transportation service by a transit agency are included in the data collection

- 5. Manual Collection** – This data could be collected manually such as via video, while this mechanism provides some statistical and logistic difficulties, it is a simple way to collect the data.

Positives

- 'Easy to deploy'

Negatives

- Collecting data on non-limited access NHS roads travelling at high speed becomes difficult and presents accuracy issues
- Does not include teleworkers
- Logistically difficult at times (e.g, evening) and in some locations
- Concerns with privacy and uses of data similar to red light enforcement techniques

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