Abstract
The accuracy of probe speed data on arterial corridors is estimated based on roadway geometric and functional attributes. Correlation analysis between functional class (medium and low) and other road characteristics (such as weighted average AADT, average signal density, average access point density, and average speed) are used as correlation factors to estimate probe traffic data accuracy. The proposed models for medium and low type of arterials are validated based on the slowdown analysis results. These models can be used to indirectly predict accuracy of probe data in medium and low class arterial corridor types.

Introduction
Arterials are often separated into two general categories: primary and secondary. The primary arterials are characterized by higher average AADT, more signalized intersections, and higher lane and travel time delays. The secondary arterials are characterized by lower average AADT, less signalized intersections, and lower lane and travel time delays. The accuracy of probe speed data on arterials is important for traffic and transportation research. This research can be used to make decisions regarding accuracy and applicability of probe data on medium and low type of arterials.

Methodology
Two validation methods used in this study defined as follows:

- **Slowdown Analysis Method**
  - The slowdown analysis is effective in assessing the ability of data to capture traffic disruptions.
  - The slowdown analysis is defined as a speed reduction of at least 15 mph from nominal speed to 10 mph, and 30 minutes.
  - A slowdown analysis identifies significant disruptions in traffic flow and classifies probe data ability to accurately capture these disruptions into one of the three categories:
    - **Fully Captured**: traffic data reflected a significant disruption to traffic flow and accurately captured the extent of slowdown.
    - **Partially Captured**: traffic data reflected a major disruption to the traffic stream, but the traffic data inaccurately reflected the reduction in speed in extent of slowdown.
    - **Poorly Captured**: a slowdown was either completely missed by the traffic data or the extent of slowdown was underestimated.

- **Data Analysis**
  - The results of correlation analysis among the arterial attributes (weighted average AADT, average signal density, average access point density, and average speed) and the accuracy of probe data in medium and low type of arterials are used as the following table:
    | Arterial Type | Weighted Average AADT (Veh/day) | Average Signal Density (signal/Mile) | Average Access Point Density (Apd/Mile) | Average Speed (mph) |
    |---------------|---------------------------------|-------------------------------------|----------------------------------------|--------------------|
    | Medium        | 40-20,000                       | 2-20                                 | 2-12                                   | 30-55              |
    | Low           | < 20,000                        | < 2                                 | < 1                                    | < 35               |
  - The validation results showed the resulting classification of probe data fidelity on each arterial corridor directly corresponds with the results obtained from classification of arterial corridor types.