



I-95 Corridor Coalition

I-95 Corridor Coalition Vehicle Probe Project: Validation of INRIX Data

Report for Georgia (#2)
GA-141, US-19, and US-41



April 2016

I-95 CORRIDOR COALITION VEHICLE PROBE PROJECT VALIDATION OF INRIX DATA APRIL 2016

*Report for Georgia (#2)
GA-141, US-19, and US-41*

Prepared for:

I-95 Corridor Coalition

Sponsored by:

I-95 Corridor Coalition

Prepared by:

Masoud Hamed, Ali Haghani, Kiana Roshan Zamir, Zhongxiang Wang
University of Maryland, College Park

Acknowledgements:

The research team would like to express its gratitude for the assistance it received from the state highway officials in Georgia during the course of this study. Their effort was instrumental during the data collection phase of the project. This report would not have been completed without their help.

April 2016

Evaluation Results for the State of Georgia

Executive Summary

The data from the Vehicle Probe Project is validated using BluetoothTM Traffic Monitoring (BTM) technology on a near monthly basis. The validation of arterial data is similar to that of freeway data, however the following should be noted. The boundaries of the speed bins used for arterials are different than those used for freeways to accommodate the lower speeds on this type of corridor.

BTMs sensor were deployed at the beginning and ending points of 16 different segments along the GA-141, US-19, and US-41 corridors. The number of lanes for GA-141 and US-41 varies between two and three per direction. For US-19, the number of lanes per direction varies between two and four. Average signal density is around two signals per mile for both GA-141 and US-41. Average Annual Daily Traffic (AADT) is 43,207 along GA-141, 146,516 along US-19, and 30,830 along US-41. The speed limit is 55 MPH for GA-141, 65 MPH for US-19, and 45 MPH for US-41.

The Bluetooth sensor deployment covers the range from McGinnis Ferry Rd to Holcomb Bridge Rd along GA-141, McFarland Rd/Exit 12 to I-285/Exit 4 along US-19, and GA-120 Loop to Windy Hill Rd along US-41. Travel time data was collected for both directions along each arterial, between February 3 and February 18, 2016. During this period, the area experienced three days with rain and three days with snow. The dataset collected represents approximately 3,697 hours of observations along 16 arterial segments, totaling approximately 29 miles. The total number of effective five-minute travel time samples observed was 44,364.

ES Table 1, below summarizes the results of the comparison between the BTM reference data and the INRIX data for arterial segments during the above noted time period. As shown, the average absolute speed error (AASE) was within specification in all speed bins. The Speed Error Bias (SEB) was also within specifications for all speed bins. Although the data are compared to these specifications, caution should be used when using probe data on arterial roadways. Other factors including signal density and traffic volume should be considered.

ES Table 1 - Georgia Evaluation Summary for Arterial

| Speed Bin | Average Absolute Speed Error (<10mph) | | Speed Error Bias (<5mph) | | Number of 5 Minute Samples | Hours of Data Collection |
|---|---------------------------------------|----------------------|--------------------------|----------------------|----------------------------|--------------------------|
| | Comparison with SEM Band | Comparison with Mean | Comparison with SEM Band | Comparison with Mean | | |
| 0-15 MPH | 3.2 | 4.8 | 3.1 | 4.5 | 981 | 82 |
| 15-25 MPH | 4.2 | 7.5 | 4.0 | 7.0 | 3919 | 327 |
| 25-35 MPH | 2.2 | 6.1 | 1.8 | 4.3 | 6076 | 506 |
| >35 MPH | 1.5 | 4.4 | -0.8 | -1.7 | 33388 | 2782 |
| All Speeds | 1.8 | 5.0 | 0.1 | 0.0 | 44364 | 3697 |
| Based upon data collected from February 3, 2016 through February 18, 2016 across 29 miles of roadway. | | | | | | |

Data Collection

Travel time samples were collected along 16 arterial segments with the assistance of Georgia Department of Transportation (GDOT) personnel. Arterial segments studied were located on the GA-141 corridor from McGinnis Ferry Rd to Holcomb Bridge Rd, on US-19 from McFarland Rd/Exit 12 to I-285/Exit 4, and on US-41 corridor from GA-120 Loop to Windy Hill Rd. Travel time data was collected for both directions along GA-141, US-19, and US-41 between February 3 and February 18, 2016. Segment locations were chosen with a high-likelihood of observing recurrent and non-recurrent congestion during peak and off-peak periods.

Figure 1, 2, and 3 present an overview snapshot of the placement of sensors for the collection of data on the GA-141, US-19, and US-41 corridors, respectively. Blue segments represent arterial segments selected for analysis. The number of lanes for GA-141 and US-41 corridors varies between two and three per direction with average signal density of around two signals per mile. For US-19, the number of lanes varies between two and four per direction. Average Annual Daily Traffic (AADT) is 43,207 along GA-141, 146,516 along US-19, and 30,830 along US-41. The speed limit is 55 MPH for GA-141, 65 MPH for US-19, and 45 MPH for US-41.

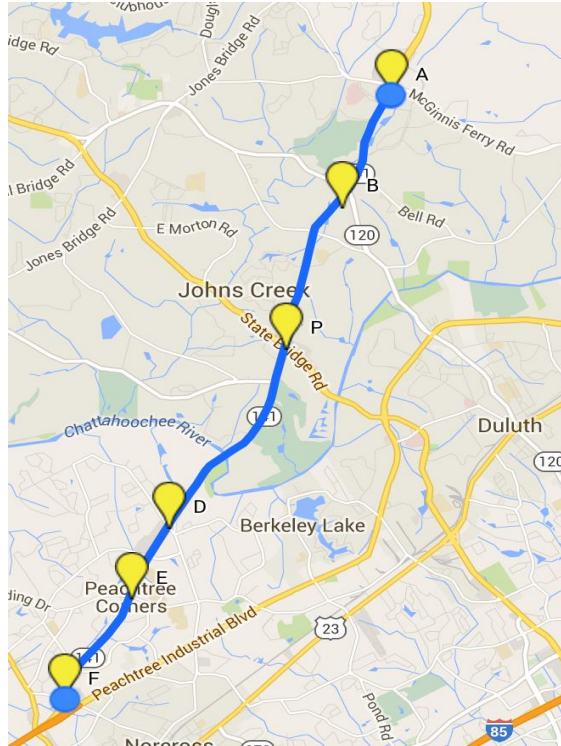


Figure 1 — Locations of all segments selected on GA-141 for analysis in Georgia

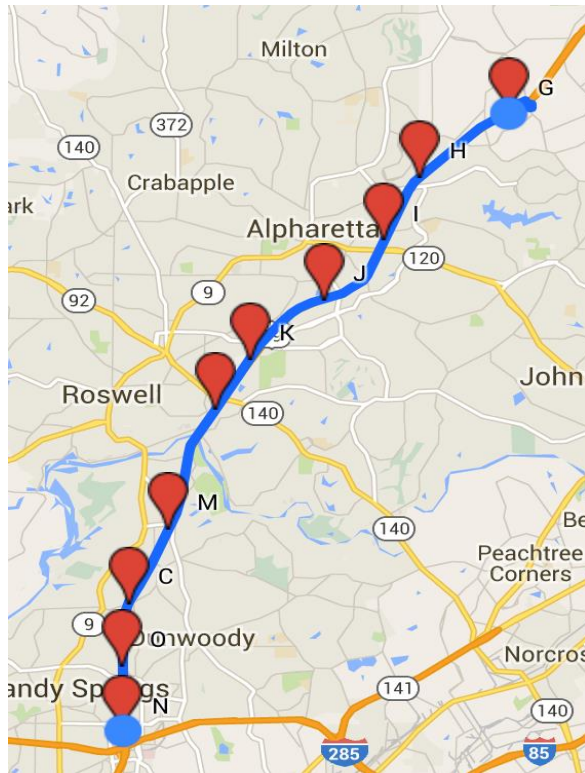


Figure 2 — Locations of all segments selected on US-19 for analysis in Georgia

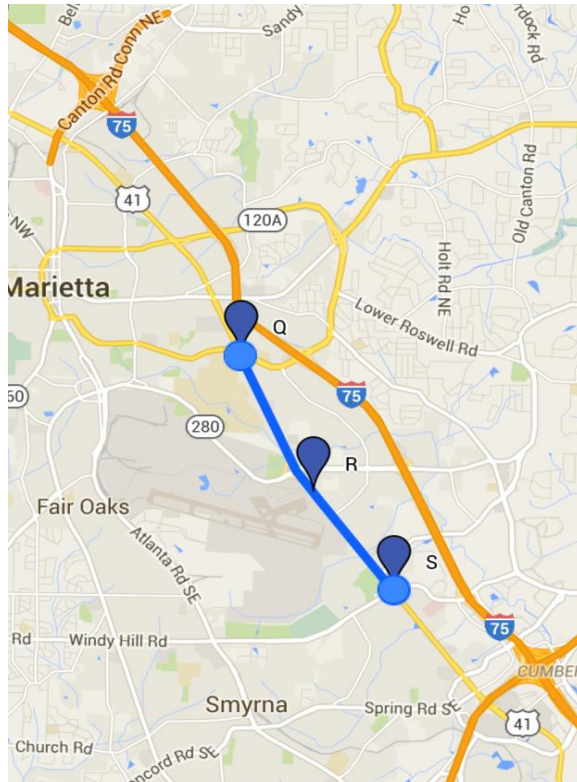


Figure 3 — Locations of all segments selected on US-41 for analysis in Georgia

TMC segments selected for validation in Georgia

Table 1 presents the data collection segments from Georgia. As a whole, these segments cover a total length of 29 arterial miles. Data collection segments are comprised of one or more Traffic Message Channel (TMC) base segments, such that the total length of the data collection segment is in most cases one mile long or greater for arterials. When appropriate, consecutive TMC segments are combined to form a data collection segment longer than one mile. The results of the validation performed on 16 bidirectional arterial segments are included in this report. Table 1 contains the summary information on each data collection segment including the latitude/longitude coordinates of the locations at which the Bluetooth sensors were deployed along GA-141, US-19, and US-41 in Georgia as well as an active map link to view the data collection segment in detail. Click on the map link to see a detailed map for the respective data collection segment. It should be noted that the configuration of the test segments is often such that the endpoint of one segment coincides with the start point of the next segment, so that one Bluetooth sensor covers both data collection segments.

Table 1 also provides data on the precise length of the TMCs comprising the test segment as compared to the measured length between BluetoothTM Traffic Monitoring (BTM) sensors placed on the roadway. An algorithm was developed and documented in a separate report¹ as part of the initial VPP project and is being used for the validation of all vendors in VPPII. Details of the algorithm used to estimate equivalent path travel times based on INRIX data feeds for individual data collection segments are provided in this separate report. This algorithm finds an equivalent INRIX travel time (and therefore travel speed) corresponding to each sample BTM travel time observation on the test segment of interest.

¹ Ali Haghani, Masoud Hamed, Kaveh Farokhi Sadabadi, Estimation of Travel Times for Multiple TMC Segments, prepared for I-95 Corridor Coalition, February 2010 ([link](#))

Table 1
Segments selected for validation in Georgia

| SEGMENT (Map Link) | DESCRIPTION | | | TMC CODES | | Deployment | |
|----------------------------------|----------------------|---------------------|---|------------------------|------------------|------------------------------|-------------------------------------|
| | Highway Georgia | State County | Starting at Ending at | Begin End | Length Number | Begin Lat/Lon End Lat/Lon | Length % Diff |
| Arterials | | | | | | | All Lengths in Miles |
| A1 GA02-0001 | GA-141 Southbound | Georgia Fulton | McGinnis Ferry Rd GA-120/Abbotts Bridge Rd | 101-05325 101N05325 | 1.50 2 | 34.067770 34.047667 | -84.168335 -84.177651 -0.70% |
| A2 GA02-0002 | GA-141 Southbound | Georgia Fulton | GA-120/Abbotts Bridge Rd State Bridge Rd | 101-05324 101N05324 | 2.23 2 | 34.047667 34.017889 | -84.177651 -84.190105 0.90% |
| A3 GA02-0003 | GA-141 Southbound | Georgia Fulton | State Bridge Rd Medlock Bridge Rd | 101-05323 101N05322 | 2.82 4 | 34.017889 33.983319 | -84.190105 -84.213912 0.00% |
| A4 GA02-0004 | GA-141 Southbound | Georgia Gwinnett | Medlock Bridge Rd Spalding Dr | 101-05321 101-05320 | 1.03 3 | 33.983319 33.969906 | -84.213912 -84.221566 0.00% |
| A5 GA02-0005 | GA-141 Southbound | Georgia Gwinnett | Spalding Dr Holcomb Bridge Rd | 101N05320 101N05319 | 1.54 3 | 33.969906 33.950248 | -84.221566 -84.235174 1.72% |
| A6 GA02-0006 | GA-141 Northbound | Georgia Gwinnett | Holcomb Bridge Rd Spalding Dr | 101P05319 101P05320 | 1.62 3 | 33.950248 33.970252 | -84.235174 -84.221168 -1.24% |
| A7 GA02-0007 | GA-141 Northbound | Georgia Gwinnett | Spalding Dr Medlock Bridge Rd | 101+05321 101+05322 | 0.99 3 | 33.970252 33.983181 | -84.221168 -84.213746 2.02% |
| A8 GA02-0008 | GA-141 Northbound | Georgia Fulton | Medlock Bridge Rd State Bridge Rd | 101P05322 101P05324 | 2.84 5 | 33.983181 34.018014 | -84.213746 -84.189926 -1.06% |
| A9 GA02-0009 | GA-141 Northbound | Georgia Fulton | State Bridge Rd GA-120/Abbotts Bridge Rd | 101+05325 101+05325 | 2.23 1 | 34.018014 34.047800 | -84.189926 -84.177379 0.19% |
| A10 GA02-0010 | GA-141 Northbound | Georgia Fulton | GA-120/Abbotts Bridge Rd McGinnis Ferry Rd | 101P05325 101+05326 | 1.50 1 | 34.047800 34.067891 | -84.177379 -84.168133 0.39% |
| A11 GA02-0011 | US-19 Southbound | Georgia Fulton | McFarland Rd/Exit 12 Windward Pkwy/Exit 11 | 101-04223 101-04223 | 2.54 1 | 34.112405 34.088774 | -84.228050 -84.261583 -13.95% |

Table 1 (Cont'd)
Segments selected for validation in Georgia

| SEGMENT (Map Link) | DESCRIPTION | | | TMC CODES | | Deployment | |
|----------------------------------|---------------------|-------------------|--|------------------------|------------------|--|----------------------------|
| | Freeway Georgia | State County | Starting at Ending at | Begin End | Length Number | Begin Lat/Lon End Lat/Lon | Length % Diff |
| Arterials | | | | | | | All Lengths in Miles |
| A12 GA02-0012 | US-19 Southbound | Georgia Fulton | Windward Pkwy/Exit 11 GA-120 /Exit 10 | 101N04223 101-04222 | 1.26 2 | 34.071962 -84.270373 34.053000 -84.290916 | 1.53 21.36% |
| A13 GA02-0013 | US-19 Southbound | Georgia Fulton | GA-120/ /Exit 10 Haynes Bridge Rd/Exit 9 | 101N04222 101N04221 | 1.87 3 | 34.053000 -84.290916 34.033876 -84.315628 | 1.86 -0.54% |
| A14 GA02-0014 | US-19 Southbound | Georgia Fulton | Haynes Bridge Rd/Exit 9 Mansell Rd/Exit 8 | 101-04220 101N04220 | 1.99 2 | 34.033876 -84.315628 34.016804 -84.328026 | 1.97 -1.00% |
| A15 GA02-0015 | US-19 Southbound | Georgia Fulton | Mansell Rd/Exit 8 GA-140 /Exit 7 | 101-04219 101N04219 | 1.38 2 | 34.016804 -84.328026 33.981744 -84.342161 | 1.27 -8.00% |
| A16 GA02-0016 | US-19 Southbound | Georgia Fulton | GA-140/ Exit 7 Northridge Rd/Exit 6 | 101-04218 101-04218 | 2.58 1 | 33.981744 -84.342161 33.957061 -84.356395 | 2.79 8.13% |
| A17 GA02-0017 | US-19 Southbound | Georgia Fulton | Northridge Rd/Exit 6 Spalding Dr | 101N04218 101-04217 | 3.29 2 | 33.957061 -84.356395 33.936931 -84.357943 | 1.80 -45.31% |
| A18 GA02-0018 | US-19 Southbound | Georgia Fulton | Spalding Dr Abernathy Rd/Exit 5 | 101-04217 101-04217 | 2.94 1 | 33.936931 -84.357943 33.914983 -84.357797 | 1.39 -52.76% |
| A19 GA02-0019 | US-19 Southbound | Georgia Fulton | Abernathy Rd/Exit 5 I-285/Exit 4 | 101N04217 101-04216 | 1.51 2 | 33.914983 -84.357797 33.937871 -84.357735 | 1.40 -7.27% |
| A20 GA02-0020 | US-19 Northbound | Georgia Fulton | I-285/Exit 4 Abernathy Rd/Exit 5 | 101+04217 101P04217 | 1.33 2 | 33.937871 -84.357735 33.957061 -84.356395 | 1.44 8.29% |
| A21 GA02-0021 | US-19 Northbound | Georgia Fulton | Abernathy Rd/Exit 5 Spalding Dr | 101+04218 101+04218 | 3.30 1 | 33.957061 -84.356395 34.112405 -84.228050 | 1.40 -57.60% |
| A22 GA02-0022 | US-19 Northbound | Georgia Fulton | Spalding Dr Northridge Rd/Exit 6 | 101+04218 101+04218 | 3.30 1 | 33.982782 -84.341420 33.982782 -84.341420 | 1.79 -45.79% |

Table 1 (Cont'd)
Segments selected for validation in Georgia

| SEGMENT (Map Link) | DESCRIPTION | | | TMC CODES | | Deployment | |
|----------------------------------|---------------------|-------------------|--|------------------------|------------------|------------------------------|--|
| | Freeway Georgia | State County | Starting at Ending at | Begin End | Length Number | Begin Lat/Lon End Lat/Lon | Length % Diff |
| Arterials | | | | | | | All Lengths in Miles |
| A23 GA02-0023 | US-19 Northbound | Georgia Fulton | Northridge Rd/Exit 6 GA-140/ Exit 7 | 101P04218 101+04219 | 2.55 2 | 34.017312 34.017312 | -84.327398 -84.327398 2.78 9.10% |
| A24 GA02-0024 | US-19 Northbound | Georgia Fulton | GA-140 /Exit 7 Mansell Rd/Exit 8 | 101P04219 101+04220 | 1.36 2 | 34.034233 34.034233 | -84.315100 -84.315100 1.27 -6.60% |
| A25 GA02-0025 | US-19 Northbound | Georgia Fulton | Mansell Rd/Exit 8 Haynes Bridge Rd/Exit 9 | 101P04220 101+04221 | 1.84 2 | 34.052313 34.052313 | -84.292477 -84.292477 1.96 6.51% |
| A26 GA02-0026 | US-19 Northbound | Georgia Fulton | Haynes Bridge Rd/Exit 9 GA-120/Exit 10 | 101P04221 101P04222 | 2.00 3 | 34.072086 34.072086 | -84.270005 -84.270005 1.88 -6.01% |
| A27 GA02-0027 | US-19 Northbound | Georgia Fulton | GA-120/ Exit 10 Windward Pkwy/Exit 11 | 101+04223 101P04223 | 1.20 2 | 34.088063 34.088063 | -84.261716 -84.261716 1.52 26.68% |
| A28 GA02-0028 | US-19 Northbound | Georgia Fulton | Windward Pkwy/Exit 11 McFarland Rd/Exit 12 | 101+04224 101+04224 | 2.56 1 | 34.112083 34.112083 | -84.228182 -84.228182 2.20 14.08% |
| A29 GA02-0029 | US-41 Southbound | Georgia Cobb | GA-120 Loop/S Marietta Pkwy SE GA-280/Cobb Dr | 101N04590 101N04589 | 1.84 3 | 33.942754 33.918840 | -84.516202 -84.502125 1.74 -5.42% |
| A30 GA02-0030 | US-41 Southbound | Georgia Cobb | GA-280/Cobb Dr Windy Hill Rd | 101-04588 101N04587 | 1.40 4 | 33.918840 33.902789 | -84.502125 -84.487262 1.41 0.89% |
| A31 GA02-0031 | US-41 Northbound | Georgia Cobb | Windy Hill Rd GA-280/Cobb Dr | 101P04587 101+04589 | 1.40 4 | 33.902789 33.918840 | -84.487262 -84.502125 1.41 0.89% |
| A32 GA02-0032 | US-41 Northbound | Georgia Cobb | GA-280/Cobb Dr GA-120 Loop/S Marietta Pkwy SE | 101P04589 101P04590 | 1.84 3 | 33.918840 33.942754 | -84.502125 -84.516202 1.74 -5.43% |

Analysis of Arterial Results

Table 2 summarizes the data quality measures obtained as a result of comparison between Bluetooth and all reported INRIX speeds. Specifications used for comparison include the Average Absolute Speed Error (AASE) and the Speed Error Bias (SEB).

Average Absolute Speed Error (AASE)

The AASE is defined as the mean absolute value of the difference between the mean speed reported from the VPP and the ground truth mean speed for a specified time period. The AASE is the primary accuracy metric. Based on the contract specifications, the speed data from the VPP shall have a maximum average absolute error of 10 miles per hour (MPH) in each of four speed ranges: 0-15 MPH, 15-25 MPH, 25-35 MPH, and > 35 MPH.

Speed Error Bias (SEB)

The SEB is defined as the average speed error (not the absolute value) in each speed range. SEB is a measure of whether the speed reported in the VPP consistently under or over estimates speed as compared to ground truth speed. Based on the contract specifications, the VPP data shall have a maximum SEB of +/- 5 MPH in each of speed ranges as defined above.

The results are presented as compared against the mean of the ground truth data as well as the 95th percent confidence interval for the mean, referred to as the Standard Error of the Mean (SEM) band. The SEM band takes into account any uncertainty in the ground truth speed as measured by BTM equipment due to limited samples and/or data variance. Contract specifications are assessed against the SEM band. (See the *Vehicle Probe Project: Data Use and Application Guide* for additional details on the validation process.) The AASE in the lower two speed bands have proven to be the critical specification (and most difficult) to attain. As shown, the average absolute speed error (AASE) was within specification for all the speed bins. The Speed Error Bias (SEB) was also within specifications for all speed bins.

TABLE 2 Data quality measures for arterial segments in Georgia

| SPEED BIN | Data Quality Measures for | | | | No. of 5 Minute Samples | Hours of Data Collection |
|--------------|---------------------------------------|--------|------|------|-------------------------------|--------------------------------|
| | 1.96 SEM Band | | Mean | | | |
| | SEB | AASE | SEB | AASE | | |
| | 5 mph (contract specifications) | 10 mph | | | | |
| 0-15 | 3.1 | 3.2 | 4.5 | 4.8 | 981 | 82 |
| 15-25 | 4.0 | 4.2 | 7.0 | 7.5 | 3919 | 327 |
| 25-35 | 1.8 | 2.2 | 4.3 | 6.1 | 6076 | 506 |
| 35+ | -0.8 | 1.5 | -1.7 | 4.4 | 33388 | 2782 |

Table 3 shows the percentage of the time INRIX data falls within 5 mph of the SEM band and the mean for each speed bin for all arterial data segments in this validation report.

**Table 3 Percent observations meeting data quality
criteria for arterial segments in Georgia**

| SPEED BIN | Data Quality Measures for | | | | No. of Obs. |
|--------------|---|---|------------------------------------|--|----------------|
| | 1.96 SEM Band | | Mean | | |
| | Percentage falling inside the band | Percentage falling within 5 mph of the band | Percentage equal to the mean | Percentage within 5 mph of the mean | |
| 0-15 | 17% | 78% | 0% | 66% | 981 |
| 15-25 | 30% | 67% | 0% | 43% | 3919 |
| 25-35 | 53% | 83% | 0% | 49% | 6076 |
| 35+ | 58% | 91% | 0% | 66% | 33388 |

Tables 4 and 5 present detailed data for individual TMC segments in this validation in a similar format as Tables 2 and 3, respectively. Note that for some segments and in some speed bins the comparison results may not be reliable due to the small number of observations.

Table 4
Data quality measures for individual arterial validation segments in the state of Georgia

| TMC | Standard TMC length | Bluetooth distance | SPEED BIN | Data Quality Measures for | | | | No. of Obs. |
|-----------|---------------------------|-----------------------|--------------|---------------------------|---------------------------------------|------------------------|---------------------------------------|----------------|
| | | | | 1.96 SEM Band | | Mean | | |
| | | | | Speed Error Bias | Average Absolute Speed Error | Speed Error Bias | Average Absolute Speed Error | |
| GA02-0001 | 1.49 | 1.49 | 0-15 | 3.5 | 3.5 | 6.8 | 6.8 | 27* |
| | | | 15-25 | 2.6 | 2.6 | 5.5 | 5.9 | 462 |
| | | | 25-35 | 0.8 | 1.4 | 2.6 | 4.9 | 517 |
| | | | 35+ | -1.1 | 1.3 | -3.6 | 5.7 | 165 |
| GA02-0002 | 2.25 | 2.25 | 0-15 | 3.1 | 3.1 | 5.1 | 5.1 | 94 |
| | | | 15-25 | 4.7 | 4.8 | 8.4 | 8.6 | 240 |
| | | | 25-35 | 3.5 | 3.5 | 7.1 | 7.6 | 490 |
| | | | 35+ | 0.0 | 1.3 | 0.6 | 5.3 | 328 |
| GA02-0003 | 2.83 | 2.82 | 0-15 | 1.7 | 1.7 | 2.5 | 2.6 | 41 |
| | | | 15-25 | 3.9 | 4.0 | 5.9 | 6.1 | 102 |
| | | | 25-35 | 2.4 | 2.5 | 6.8 | 7.2 | 238 |
| | | | 35+ | -0.5 | 1.2 | -0.3 | 4.6 | 1050 |
| GA02-0004 | 1.03 | 1.03 | 0-15 | 8.7 | 8.7 | 13.7 | 13.7 | 30* |
| | | | 15-25 | 5.4 | 5.5 | 9.4 | 9.7 | 598 |
| | | | 25-35 | 2.1 | 2.4 | 5.8 | 7.6 | 482 |
| | | | 35+ | -0.1 | 2.2 | 0.8 | 6.7 | 170 |
| GA02-0005 | 1.57 | 1.56 | 0-15 | 3.1 | 3.2 | 4.4 | 5.0 | 35 |
| | | | 15-25 | 3.3 | 3.3 | 6.6 | 6.9 | 97 |
| | | | 25-35 | 1.4 | 1.8 | 4.3 | 6.4 | 344 |
| | | | 35+ | -1.9 | 2.2 | -4.0 | 6.6 | 753 |
| GA02-0006 | 1.59 | 1.60 | 0-15 | 6.6 | 6.6 | 8.3 | 8.3 | 6* |
| | | | 15-25 | 2.4 | 2.6 | 4.3 | 5.1 | 50 |
| | | | 25-35 | 1.7 | 2.3 | 4.4 | 6.5 | 225 |
| | | | 35+ | -1.1 | 1.8 | -2.2 | 5.9 | 1226 |
| GA02-0007 | 1.01 | 1.01 | 0-15 | 4.5 | 4.5 | 5.7 | 5.7 | 168 |
| | | | 15-25 | 7.7 | 7.7 | 12.3 | 12.5 | 570 |
| | | | 25-35 | 4.5 | 4.6 | 9.9 | 10.9 | 552 |
| | | | 35+ | -0.2 | 2.1 | 0.5 | 7.3 | 175 |
| GA02-0008 | 2.80 | 2.81 | 0-15 | 1.5 | 1.6 | 1.8 | 2.1 | 21* |
| | | | 15-25 | 1.8 | 1.8 | 3.0 | 3.2 | 171 |
| | | | 25-35 | 1.0 | 1.4 | 2.4 | 4.1 | 344 |
| | | | 35+ | -1.3 | 1.7 | -3.1 | 4.7 | 1017 |
| GA02-0009 | 2.23 | 2.23 | 0-15 | 2.7 | 2.7 | 3.9 | 4.0 | 60 |
| | | | 15-25 | 2.7 | 2.7 | 4.6 | 4.9 | 246 |
| | | | 25-35 | 1.5 | 1.7 | 3.4 | 4.8 | 649 |
| | | | 35+ | -0.8 | 1.3 | -2.3 | 5.0 | 231 |
| GA02-0010 | 1.51 | 1.50 | 0-15 | 4.2 | 4.2 | 6.0 | 6.0 | 26* |
| | | | 15-25 | 2.7 | 2.8 | 5.3 | 5.9 | 306 |
| | | | 25-35 | 0.8 | 1.2 | 2.3 | 4.6 | 768 |
| | | | 35+ | -1.2 | 1.5 | -2.9 | 5.0 | 251 |
| GA02-0011 | 2.19 | 2.19 | 0-15 | - | - | - | - | - |
| | | | 15-25 | - | - | - | - | - |
| | | | 25-35 | - | - | - | - | - |
| | | | 35+ | -1.0 | 1.1 | -3.2 | 3.9 | 2205 |

*Results in the specified row may not be reliable due to small number of observations

Table 4 (Cont'd)
Data quality measures for individual arterial validation segments in the state of Georgia

| TMC | Standard TMC length | Bluetooth distance | SPEED BIN | Data Quality Measures for | | | | No. of Obs. |
|-----------|---------------------------|-----------------------|--------------|---------------------------|---------------------------------------|------------------------|---------------------------------------|----------------|
| | | | | 1.96 SEM Band | | Mean | | |
| | | | | Speed Error Bias | Average Absolute Speed Error | Speed Error Bias | Average Absolute Speed Error | |
| GA02-0012 | 1.53 | 1.53 | 0-15 | 44.9 | 44.9 | 49.6 | 49.6 | 1* |
| | | | 15-25 | - | - | - | - | - |
| | | | 25-35 | 28.6 | 28.6 | 30.7 | 30.7 | 1* |
| | | | 35+ | 0.3 | 0.7 | 1.1 | 3.1 | 2467 |
| GA02-0013 | 1.86 | 1.86 | 0-15 | 1.9 | 1.9 | 2.8 | 3.1 | 21* |
| | | | 15-25 | 3.1 | 3.1 | 4.4 | 4.7 | 39 |
| | | | 25-35 | 7.4 | 9.5 | 7.5 | 11.5 | 21* |
| | | | 35+ | -0.6 | 1.0 | -1.7 | 3.4 | 1648 |
| GA02-0014 | 1.97 | 1.97 | 0-15 | 1.1 | 1.3 | 1.4 | 1.9 | 108 |
| | | | 15-25 | 3.6 | 4.1 | 4.2 | 5.0 | 72 |
| | | | 25-35 | 6.7 | 7.6 | 7.4 | 8.9 | 40 |
| | | | 35+ | 0.4 | 1.5 | 1.3 | 3.7 | 1768 |
| GA02-0015 | 1.26 | 1.27 | 0-15 | 1.9 | 2.5 | 2.2 | 3.6 | 55 |
| | | | 15-25 | 0.0 | 2.0 | -0.1 | 3.5 | 68 |
| | | | 25-35 | 0.9 | 3.1 | 1.2 | 4.5 | 81 |
| | | | 35+ | -2.0 | 2.4 | -4.9 | 5.6 | 2596 |
| GA02-0016 | 2.88 | 2.79 | 0-15 | 2.1 | 2.6 | 2.6 | 3.3 | 15* |
| | | | 15-25 | 2.3 | 2.6 | 2.8 | 3.4 | 93 |
| | | | 25-35 | 0.9 | 3.4 | 1.1 | 4.6 | 34 |
| | | | 35+ | -2.3 | 2.4 | -4.7 | 5.1 | 2306 |
| GA02-0017 | 1.80 | 1.80 | 0-15 | - | - | - | - | - |
| | | | 15-25 | 1.0 | 1.0 | 1.8 | 1.8 | 6* |
| | | | 25-35 | -2.0 | 2.3 | -2.9 | 3.5 | 16* |
| | | | 35+ | -3.4 | 3.5 | -6.2 | 6.7 | 250 |
| GA02-0018 | 1.39 | 1.39 | 0-15 | - | - | - | - | - |
| | | | 15-25 | 7.9 | 7.9 | 12.0 | 12.0 | 1* |
| | | | 25-35 | 6.5 | 6.5 | 12.4 | 12.4 | 2* |
| | | | 35+ | 2.6 | 2.6 | 5.6 | 6.0 | 119 |
| GA02-0019 | 1.40 | 1.40 | 0-15 | 6.4 | 6.4 | 7.7 | 7.7 | 3* |
| | | | 15-25 | 14.2 | 14.3 | 15.8 | 16.4 | 8* |
| | | | 25-35 | 10.5 | 13.1 | 12.3 | 15.5 | 7* |
| | | | 35+ | 1.1 | 2.0 | 3.5 | 5.8 | 109 |
| GA02-0020 | 1.44 | 1.44 | 0-15 | - | - | - | - | - |
| | | | 15-25 | 7.0 | 7.0 | 8.3 | 8.3 | 7* |
| | | | 25-35 | 2.7 | 4.3 | 3.3 | 6.5 | 11* |
| | | | 35+ | 1.2 | 2.2 | 4.3 | 6.6 | 98 |
| GA02-0021 | 1.40 | 1.40 | 0-15 | - | - | - | - | - |
| | | | 15-25 | 8.3 | 8.3 | 9.5 | 9.5 | 8* |
| | | | 25-35 | 6.3 | 6.3 | 8.3 | 8.3 | 16* |
| | | | 35+ | 3.6 | 3.8 | 6.7 | 7.1 | 103 |
| GA02-0022 | 1.79 | 1.79 | 0-15 | 3.8 | 3.8 | 5.1 | 5.3 | 3* |
| | | | 15-25 | 7.9 | 12.6 | 9.3 | 16.1 | 3* |
| | | | 25-35 | 0.3 | 1.8 | -0.3 | 3.4 | 20* |
| | | | 35+ | -1.1 | 1.9 | -2.9 | 4.4 | 284 |

*Results in the specified row may not be reliable due to small number of observations

Table 4 (Cont'd)
Data quality measures for individual arterial validation segments in the state of Georgia

| TMC | Standard TMC length | Bluetooth distance | SPEED BIN | Data Quality Measures for | | | | No. of Obs. |
|-----------|---------------------|--------------------|-----------|---------------------------|------------------------------|------------------|------------------------------|-------------|
| | | | | 1.96 SEM Band | | Mean | | |
| | | | | Speed Error Bias | Average Absolute Speed Error | Speed Error Bias | Average Absolute Speed Error | |
| GA02-0023 | 2.78 | 2.78 | 0-15 | 11.5 | 11.5 | 12.6 | 12.6 | 3* |
| | | | 15-25 | 14.9 | 14.9 | 18.4 | 18.4 | 5* |
| | | | 25-35 | 7.0 | 7.5 | 8.3 | 9.7 | 18* |
| | | | 35+ | -0.9 | 1.3 | -3.4 | 4.4 | 2295 |
| GA02-0024 | 1.27 | 1.27 | 0-15 | 17.1 | 17.1 | 18.1 | 18.1 | 2* |
| | | | 15-25 | 12.5 | 13.0 | 13.5 | 14.9 | 16* |
| | | | 25-35 | 8.0 | 8.0 | 14.7 | 14.7 | 3* |
| | | | 35+ | 0.8 | 1.4 | 3.1 | 4.8 | 2626 |
| GA02-0025 | 1.96 | 1.96 | 0-15 | 18.0 | 18.0 | 20.7 | 20.7 | 5* |
| | | | 15-25 | 13.1 | 13.1 | 18.6 | 18.6 | 8* |
| | | | 25-35 | 4.3 | 4.3 | 17.2 | 17.3 | 4* |
| | | | 35+ | -0.7 | 1.0 | -1.7 | 3.3 | 1903 |
| GA02-0026 | 1.88 | 1.88 | 0-15 | - | - | - | - | - |
| | | | 15-25 | 0.8 | 0.8 | 4.1 | 4.1 | 2* |
| | | | 25-35 | 7.1 | 9.5 | 7.2 | 12.6 | 3* |
| | | | 35+ | -0.7 | 0.8 | -3.5 | 4.2 | 1695 |
| GA02-0027 | 1.52 | 1.52 | 0-15 | - | - | - | - | - |
| | | | 15-25 | -0.1 | 0.1 | -2.0 | 2.0 | 3* |
| | | | 25-35 | -3.8 | 3.8 | -6.5 | 7.4 | 13* |
| | | | 35+ | -1.0 | 1.5 | -1.3 | 4.4 | 2470 |
| GA02-0028 | 2.20 | 2.20 | 0-15 | 0.0 | 0.8 | -0.3 | 1.5 | 36 |
| | | | 15-25 | -0.6 | 1.0 | -1.2 | 2.0 | 74 |
| | | | 25-35 | 1.1 | 2.9 | 1.1 | 4.6 | 23* |
| | | | 35+ | -0.6 | 0.8 | -1.7 | 3.3 | 2060 |
| GA02-0029 | 1.75 | 1.74 | 0-15 | - | - | - | - | - |
| | | | 15-25 | 5.2 | 5.2 | 11.3 | 11.3 | 13* |
| | | | 25-35 | 0.9 | 1.4 | 3.9 | 5.7 | 285 |
| | | | 35+ | -1.2 | 1.6 | -2.1 | 4.4 | 522 |
| GA02-0030 | 1.41 | 1.41 | 0-15 | 2.9 | 3.0 | 4.8 | 4.9 | 175 |
| | | | 15-25 | 1.7 | 1.9 | 3.9 | 4.7 | 282 |
| | | | 25-35 | -0.4 | 1.1 | -1.3 | 4.3 | 123 |
| | | | 35+ | -5.3 | 5.3 | -8.9 | 9.1 | 19* |
| GA02-0031 | 1.41 | 1.41 | 0-15 | 6.6 | 6.6 | 17.3 | 17.3 | 8* |
| | | | 15-25 | 4.6 | 4.6 | 9.8 | 10.0 | 262 |
| | | | 25-35 | 1.1 | 1.4 | 4.1 | 5.5 | 410 |
| | | | 35+ | -1.2 | 1.3 | -3.5 | 4.6 | 77 |
| GA02-0032 | 1.75 | 1.74 | 0-15 | 1.6 | 1.7 | 2.1 | 2.6 | 38 |
| | | | 15-25 | 2.7 | 3.1 | 4.4 | 5.4 | 107 |
| | | | 25-35 | 0.5 | 1.2 | 1.7 | 4.2 | 336 |
| | | | 35+ | -1.6 | 1.9 | -3.8 | 5.0 | 402 |

*Results in the specified row may not be reliable due to small number of observations

Table 5
Observations meeting data quality criteria for individual arterial validation segments
in the state of Georgia

| TMC | SPEED BIN | Data Quality Measures for | | | | | | | | No. of Obs. |
|-----------|-----------|-----------------------------|---------------------------|--------------------------------------|------------------------------------|-----------------------|---------------------|------------------------------|----------------------------|-------------|
| | | 1.96 SEM Band | | | | Mean | | | | |
| | | Speed Error Bias | | Average Absolute Speed Error | | Speed Error Bias | | Average Absolute Speed Error | | |
| | | No. falling inside the band | % falling inside the band | No. falling within 5 mph of the band | % falling within 5 mph of the band | No. equal to the mean | % equal to the mean | No. within 5 mph of the mean | % within 5 mph of the mean | |
| GA02-0001 | 0-15 | 0 | 0% | 17 | 63% | 0 | 0% | 14 | 52% | 27* |
| | 15-25 | 53 | 11% | 273 | 59% | 0 | 0% | 224 | 48% | 462 |
| | 25-35 | 104 | 20% | 378 | 73% | 0 | 0% | 303 | 59% | 517 |
| | 35+ | 36 | 22% | 110 | 67% | 0 | 0% | 78 | 47% | 165 |
| GA02-0002 | 0-15 | 2 | 2% | 63 | 67% | 0 | 0% | 53 | 56% | 94 |
| | 15-25 | 12 | 5% | 86 | 36% | 0 | 0% | 71 | 30% | 240 |
| | 25-35 | 47 | 10% | 210 | 43% | 0 | 0% | 159 | 32% | 490 |
| | 35+ | 64 | 20% | 226 | 69% | 0 | 0% | 181 | 55% | 328 |
| GA02-0003 | 0-15 | 4 | 10% | 38 | 93% | 0 | 0% | 37 | 90% | 41 |
| | 15-25 | 3 | 3% | 58 | 57% | 0 | 0% | 50 | 49% | 102 |
| | 25-35 | 22 | 9% | 122 | 51% | 0 | 0% | 83 | 35% | 238 |
| | 35+ | 225 | 21% | 786 | 75% | 0 | 0% | 638 | 61% | 1050 |
| GA02-0004 | 0-15 | 0 | 0% | 3 | 10% | 0 | 0% | 2 | 7% | 30* |
| | 15-25 | 50 | 8% | 214 | 36% | 0 | 0% | 185 | 31% | 598 |
| | 25-35 | 72 | 15% | 259 | 54% | 0 | 0% | 180 | 37% | 482 |
| | 35+ | 34 | 20% | 101 | 59% | 0 | 0% | 74 | 44% | 170 |
| GA02-0005 | 0-15 | 1 | 3% | 22 | 63% | 0 | 0% | 20 | 57% | 35 |
| | 15-25 | 8 | 8% | 56 | 58% | 0 | 0% | 41 | 42% | 97 |
| | 25-35 | 57 | 17% | 207 | 60% | 0 | 0% | 149 | 43% | 344 |
| | 35+ | 181 | 24% | 467 | 62% | 1 | 0% | 348 | 46% | 753 |
| GA02-0006 | 0-15 | 0 | 0% | 3 | 50% | 0 | 0% | 3 | 50% | 6* |
| | 15-25 | 10 | 20% | 33 | 66% | 0 | 0% | 33 | 66% | 50 |
| | 25-35 | 17 | 8% | 123 | 55% | 0 | 0% | 86 | 38% | 225 |
| | 35+ | 268 | 22% | 811 | 66% | 1 | 0% | 616 | 50% | 1226 |
| GA02-0007 | 0-15 | 2 | 1% | 97 | 58% | 0 | 0% | 90 | 54% | 168 |
| | 15-25 | 24 | 4% | 134 | 24% | 0 | 0% | 96 | 17% | 570 |
| | 25-35 | 62 | 11% | 201 | 36% | 0 | 0% | 131 | 24% | 552 |
| | 35+ | 34 | 19% | 98 | 56% | 0 | 0% | 71 | 41% | 175 |
| GA02-0008 | 0-15 | 0 | 0% | 21 | 100% | 0 | 0% | 21 | 100% | 21* |
| | 15-25 | 10 | 6% | 145 | 85% | 0 | 0% | 139 | 81% | 171 |
| | 25-35 | 65 | 19% | 263 | 76% | 0 | 0% | 231 | 67% | 344 |
| | 35+ | 188 | 18% | 735 | 72% | 0 | 0% | 623 | 61% | 1017 |
| GA02-0009 | 0-15 | 1 | 2% | 45 | 75% | 0 | 0% | 43 | 72% | 60 |
| | 15-25 | 21 | 9% | 158 | 64% | 0 | 0% | 143 | 58% | 246 |
| | 25-35 | 96 | 15% | 442 | 68% | 0 | 0% | 374 | 58% | 649 |
| | 35+ | 48 | 21% | 158 | 68% | 0 | 0% | 131 | 57% | 231 |
| GA02-0010 | 0-15 | 0 | 0% | 16 | 62% | 0 | 0% | 16 | 62% | 26* |
| | 15-25 | 32 | 10% | 170 | 56% | 0 | 0% | 145 | 47% | 306 |
| | 25-35 | 176 | 23% | 569 | 74% | 0 | 0% | 470 | 61% | 768 |
| | 35+ | 67 | 27% | 193 | 77% | 0 | 0% | 155 | 62% | 251 |
| GA02-0011 | 0-15 | - | - | - | - | - | - | - | - | - |
| | 15-25 | - | - | - | - | - | - | - | - | - |
| | 25-35 | - | - | - | - | - | - | - | - | - |
| | 35+ | 554 | 25% | 1833 | 83% | 1 | 0% | 1546 | 70% | 2205 |

*Results in the specified row may not be reliable due to small number of observations

Table 5 (Cont'd)
Observations meeting data quality criteria for individual arterial validation segments
in the state of Georgia

| TMC | SPEED BIN | Data Quality Measures for | | | | | | | | No. of Obs. |
|-----------|-----------|-----------------------------|---------------------------|--------------------------------------|------------------------------------|-----------------------|---------------------|------------------------------|----------------------------|-------------|
| | | 1.96 SEM Band | | | | Mean | | | | |
| | | Speed Error Bias | | Average Absolute Speed Error | | Speed Error Bias | | Average Absolute Speed Error | | |
| | | No. falling inside the band | % falling inside the band | No. falling within 5 mph of the band | % falling within 5 mph of the band | No. equal to the mean | % equal to the mean | No. within 5 mph of the mean | % within 5 mph of the mean | |
| GA02-0012 | 0-15 | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1* |
| | 15-25 | - | - | - | - | - | - | - | - | - |
| | 25-35 | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1* |
| | 35+ | 772 | 31% | 2264 | 92% | 11 | 0% | 1992 | 81% | 2467 |
| GA02-0013 | 0-15 | 3 | 14% | 19 | 90% | 0 | 0% | 19 | 90% | 21* |
| | 15-25 | 7 | 18% | 30 | 77% | 0 | 0% | 28 | 72% | 39 |
| | 25-35 | 3 | 14% | 9 | 43% | 0 | 0% | 9 | 43% | 21* |
| | 35+ | 504 | 31% | 1474 | 89% | 0 | 0% | 1326 | 80% | 1648 |
| GA02-0014 | 0-15 | 12 | 11% | 104 | 96% | 0 | 0% | 104 | 96% | 108 |
| | 15-25 | 9 | 13% | 47 | 65% | 0 | 0% | 44 | 61% | 72 |
| | 25-35 | 0 | 0% | 17 | 43% | 0 | 0% | 15 | 38% | 40 |
| | 35+ | 479 | 27% | 1534 | 87% | 0 | 0% | 1382 | 78% | 1768 |
| GA02-0015 | 0-15 | 7 | 13% | 45 | 82% | 0 | 0% | 37 | 67% | 55 |
| | 15-25 | 15 | 22% | 59 | 87% | 0 | 0% | 50 | 74% | 68 |
| | 25-35 | 20 | 25% | 61 | 75% | 0 | 0% | 57 | 70% | 81 |
| | 35+ | 330 | 13% | 1707 | 66% | 1 | 0% | 1246 | 48% | 2596 |
| GA02-0016 | 0-15 | 4 | 27% | 13 | 87% | 0 | 0% | 12 | 80% | 15* |
| | 15-25 | 5 | 5% | 80 | 86% | 0 | 0% | 73 | 78% | 93 |
| | 25-35 | 6 | 18% | 22 | 65% | 0 | 0% | 21 | 62% | 34 |
| | 35+ | 259 | 11% | 1668 | 72% | 0 | 0% | 1259 | 55% | 2306 |
| GA02-0017 | 0-15 | - | - | - | - | - | - | - | - | - |
| | 15-25 | 1 | 17% | 6 | 100% | 0 | 0% | 6 | 100% | 6* |
| | 25-35 | 4 | 25% | 14 | 88% | 0 | 0% | 12 | 75% | 16* |
| | 35+ | 28 | 11% | 172 | 69% | 0 | 0% | 120 | 48% | 250 |
| GA02-0018 | 0-15 | - | - | - | - | - | - | - | - | - |
| | 15-25 | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1* |
| | 25-35 | 0 | 0% | 1 | 50% | 0 | 0% | 1 | 50% | 2* |
| | 35+ | 15 | 13% | 74 | 62% | 0 | 0% | 56 | 47% | 119 |
| GA02-0019 | 0-15 | 0 | 0% | 1 | 33% | 0 | 0% | 1 | 33% | 3* |
| | 15-25 | 0 | 0% | 2 | 25% | 0 | 0% | 1 | 13% | 8* |
| | 25-35 | 0 | 0% | 2 | 29% | 0 | 0% | 2 | 29% | 7* |
| | 35+ | 20 | 18% | 83 | 76% | 0 | 0% | 58 | 53% | 109 |
| GA02-0020 | 0-15 | - | - | - | - | - | - | - | - | - |
| | 15-25 | 0 | 0% | 3 | 43% | 0 | 0% | 3 | 43% | 7* |
| | 25-35 | 2 | 18% | 8 | 73% | 0 | 0% | 8 | 73% | 11* |
| | 35+ | 15 | 15% | 66 | 67% | 0 | 0% | 45 | 46% | 98 |
| GA02-0021 | 0-15 | - | - | - | - | - | - | - | - | - |
| | 15-25 | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 8* |
| | 25-35 | 1 | 6% | 6 | 38% | 0 | 0% | 4 | 25% | 16* |
| | 35+ | 6 | 6% | 51 | 50% | 0 | 0% | 29 | 28% | 103 |
| GA02-0022 | 0-15 | 1 | 33% | 2 | 67% | 0 | 0% | 2 | 67% | 3* |
| | 15-25 | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 3* |
| | 25-35 | 0 | 0% | 18 | 90% | 0 | 0% | 16 | 80% | 20* |
| | 35+ | 61 | 21% | 232 | 82% | 0 | 0% | 195 | 69% | 284 |

*Results in the specified row may not be reliable due to small number of observations

Table 5 (Cont'd)
Observations meeting data quality criteria for individual arterial validation segments
in the state of Georgia

| TMC | SPEED BIN | Data Quality Measures for | | | | | | | | No. of Obs. |
|-----------|-----------|-----------------------------|---------------------------|--------------------------------------|------------------------------------|-----------------------|---------------------|------------------------------|----------------------------|-------------|
| | | 1.96 SEM Band | | | | Mean | | | | |
| | | Speed Error Bias | | Average Absolute Speed Error | | Speed Error Bias | | Average Absolute Speed Error | | |
| | | No. falling inside the band | % falling inside the band | No. falling within 5 mph of the band | % falling within 5 mph of the band | No. equal to the mean | % equal to the mean | No. within 5 mph of the mean | % within 5 mph of the mean | |
| GA02-0023 | 0-15 | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 3* |
| | 15-25 | 0 | 0% | 1 | 20% | 0 | 0% | 1 | 20% | 5* |
| | 25-35 | 3 | 17% | 11 | 61% | 0 | 0% | 11 | 61% | 18* |
| | 35+ | 483 | 21% | 1872 | 82% | 0 | 0% | 1512 | 66% | 2295 |
| GA02-0024 | 0-15 | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 2* |
| | 15-25 | 0 | 0% | 10 | 63% | 0 | 0% | 10 | 63% | 16* |
| | 25-35 | 1 | 33% | 1 | 33% | 0 | 0% | 1 | 33% | 3* |
| | 35+ | 610 | 23% | 2055 | 78% | 0 | 0% | 1619 | 62% | 2626 |
| GA02-0025 | 0-15 | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 5* |
| | 15-25 | 0 | 0% | 4 | 50% | 0 | 0% | 1 | 13% | 8* |
| | 25-35 | 1 | 25% | 1 | 25% | 0 | 0% | 1 | 25% | 4* |
| | 35+ | 671 | 35% | 1694 | 89% | 1 | 0% | 1545 | 81% | 1903 |
| GA02-0026 | 0-15 | - | - | - | - | - | - | - | - | - |
| | 15-25 | 0 | 0% | 2 | 100% | 0 | 0% | 1 | 50% | 2* |
| | 25-35 | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 3* |
| | 35+ | 455 | 27% | 1428 | 84% | 1 | 0% | 1140 | 67% | 1695 |
| GA02-0027 | 0-15 | - | - | - | - | - | - | - | - | - |
| | 15-25 | 0 | 0% | 3 | 100% | 0 | 0% | 3 | 100% | 3* |
| | 25-35 | 0 | 0% | 7 | 54% | 0 | 0% | 3 | 23% | 13* |
| | 35+ | 771 | 31% | 2067 | 84% | 0 | 0% | 1802 | 73% | 2470 |
| GA02-0028 | 0-15 | 6 | 17% | 35 | 97% | 0 | 0% | 35 | 97% | 36 |
| | 15-25 | 12 | 16% | 73 | 99% | 0 | 0% | 72 | 97% | 74 |
| | 25-35 | 4 | 17% | 18 | 78% | 0 | 0% | 14 | 61% | 23* |
| | 35+ | 608 | 30% | 1850 | 90% | 1 | 0% | 1647 | 80% | 2060 |
| GA02-0029 | 0-15 | - | - | - | - | - | - | - | - | - |
| | 15-25 | 0 | 0% | 4 | 31% | 0 | 0% | 1 | 8% | 13* |
| | 25-35 | 40 | 14% | 186 | 65% | 0 | 0% | 130 | 46% | 285 |
| | 35+ | 115 | 22% | 393 | 75% | 1 | 0% | 349 | 67% | 522 |
| GA02-0030 | 0-15 | 2 | 1% | 117 | 67% | 0 | 0% | 106 | 61% | 175 |
| | 15-25 | 39 | 14% | 199 | 71% | 1 | 0% | 179 | 63% | 282 |
| | 25-35 | 23 | 19% | 93 | 76% | 0 | 0% | 75 | 61% | 123 |
| | 35+ | 1 | 5% | 5 | 26% | 0 | 0% | 4 | 21% | 19* |
| GA02-0031 | 0-15 | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 8* |
| | 15-25 | 16 | 6% | 67 | 26% | 0 | 0% | 43 | 16% | 262 |
| | 25-35 | 85 | 21% | 272 | 66% | 0 | 0% | 211 | 51% | 410 |
| | 35+ | 19 | 25% | 60 | 78% | 0 | 0% | 49 | 64% | 77 |
| GA02-0032 | 0-15 | 7 | 18% | 33 | 87% | 0 | 0% | 32 | 84% | 38 |
| | 15-25 | 11 | 10% | 66 | 62% | 0 | 0% | 60 | 56% | 107 |
| | 25-35 | 65 | 19% | 258 | 77% | 0 | 0% | 221 | 66% | 336 |
| | 35+ | 61 | 15% | 265 | 66% | 1 | 0% | 223 | 55% | 402 |