I-95 Corridor Coalition

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

Monthly Report: Florida

I-95 CORRIDOR COALITION

April 2012

I-95 CORRIDOR COALITION VEHICLE PROBE PROJECT VALIDATION OF INRIX DATA NOVEMBER-DECEMBER 2011

Monthly Report

Prepared for:

I-95 Corridor Coalition

Sponsored by:

I-95 Corridor Coalition

Prepared by:

Ali Haghani, Masoud Hamedi, Kaveh Farokhi Sadabadi
University of Maryland, College Park

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April 2012

Evaluation Results for the State of Florida

Executive Summary

Travel time samples were collected in Florida on two occasions. The first round of deployments was focused in Jacksonville (Duval County) along approximately 20 freeway miles from Thursday, November 17, 2011 through Wednesday, November 30, 2011. The second round of deployments was concentrated in the Fort Lauderdale area (Broward County) along approximately 22 freeway miles from Tuesday, December 6, 2011 through Friday, December 16, 2011. The results of the two deployments, both along I-95, were compared with travel time and speed data reported by INRIX as part of the I-95 Vehicle Probe project. The freeway validation data for both efforts were combined and are shown below. The data represents approximately 3020 hours of observations along 23 freeway segments, totaling approximately 44 miles. Of the 3020 hours of observations, over 175 hours were during congested periods in which the traffic flowed at 45 mph or less.

ES Table 1, below summarizes the results of the comparison between the validation data and the INRIX data for freeway segments during the above noted periods. As shown, the average absolute speed error (AASE) and Speed Error Bias (SEB) were within specification for all speed bins. Even when errors are measured against the mean (rather than the SEM band) the data meets contract specifications for the AASE in all speed bins.

ES Table 1 - Florida Evaluation Summary

Speed Bin	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		
0-30 MPH	**3.40**	4.80	**2.50**	3.30	710	59.2
30-45 MPH	**5.50**	8.00	**4.60**	6.30	1439	119.9
45-60 MPH	**3.10**	6.00	**2.80**	5.10	9119	759.9
> 60 MPH	**1.20**	3.70	**0.10**	0.10	24987	2082.3
All Speeds	1.89	4.47	1.00	1.67	36255	3021.3

Based upon data collected from Noverber 17 through December 16, 2012 across 44 miles of roadway.

As part of the ongoing validation process, vehicle probe data from each state is validated on a rotating basis. This is the first time that data has been validated in Florida. As additional validation is performed, a summary of the cumulative validation effort will be provided.

Data Collection

The data from the Vehicle Probe Project is validated using Bluetooth™ Traffic Monitoring (BTM) technology on a near monthly basis. BTMs sensor were deployed in Florida on two separate occasions. The first round of deployments was focused in Jacksonville from Thursday, November 17, 2011 through Wednesday, November 30, 2011. The second round was focused on the Fort Lauderdale area from Tuesday, December 6, 2011 through Friday, December 16, 2011. In both cases, sensor deployment and retrievals were assisted by Florida Department of Transportation (FDOT) personnel. This round of data collections in Florida was designed to capture traffic data on a sample of freeways. Locations are chosen with a high likelihood of observing recurrent and non-recurrent congestions during peak or off-peak periods.

Figure 1 presents a snapshot of the roadway segments over which Bluetooth sensors were deployed in Florida. Blue segments represent freeway segments selected for analysis along I-95.

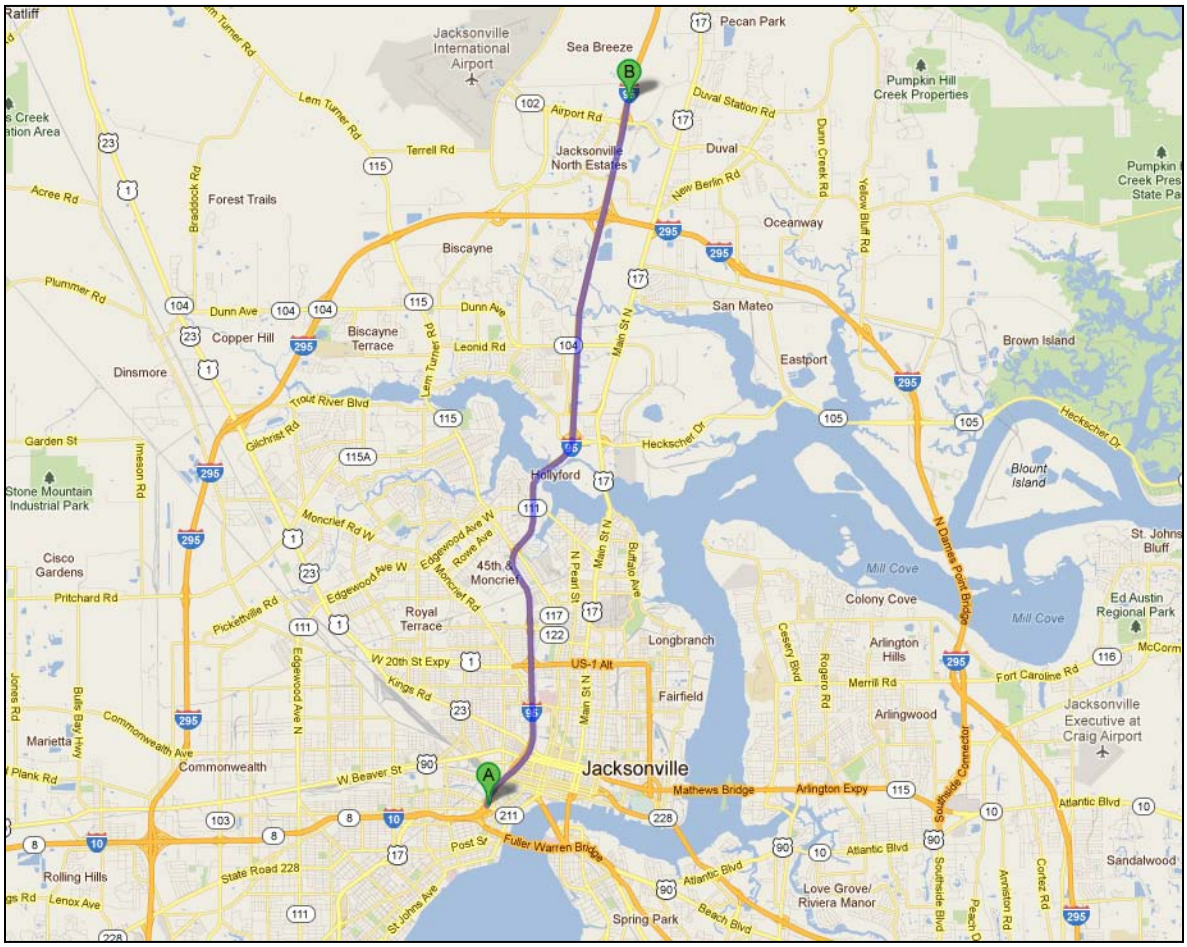

Figure 1 – Location of data collection segments in Duval County

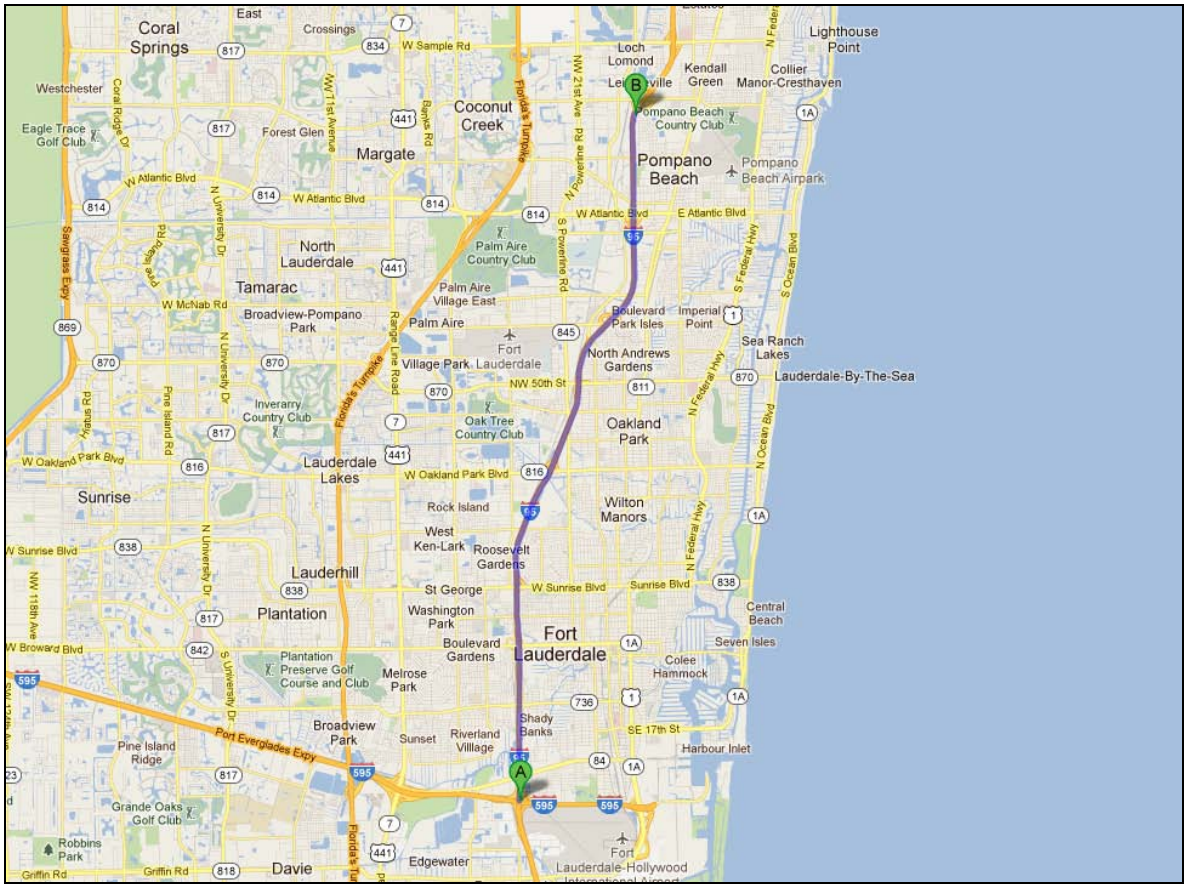

Figure 1 (Cont'd) - Location of data collection segments in Broward County

TMC segments selected for validation in Florida

Table 1 presents a list of data collection segments from Florida. In total, these segments cover a total length of approximately 43 freeway miles. Data collection segments are comprised of one or more Traffic Message Channel (TMC) base segments, such that total length of the data collection segment is one mile long or greater for freeways. When appropriate, consecutive TMC segments are combined to form a data collection segment longer than one mile. The results of validation performed on 25 freeway segments are included in this report. Table 1 contains summary information on each data collection segment. The latitude/longitude coordinates of the locations at which the Bluetooth sensors were deployed throughout the state of Florida are provided in Table 1 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 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 Bluetooth™ Traffic Monitoring (BTM) sensors placed on the roadway. Details of the algorithm used to estimate equivalent path travel times based on INRIX data feeds for individual data collection segments are provided in a 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.

Table 1
Segments selected for validation in Florida

SEGMENT (Map Link)	DESCRIPTION			TMC CODES		Deployment		
	Highway Direction	State County	Starting at Ending at	Begin End	Number Length	Begin Lat/Lon End Lat/Lon		Length % Diff
FREEWAYS								All Lengths in Miles
F1	I-95	Florida	Myrtle Ave/Exit 352A	102+05110	8	30.324404	-81.679573	1.29
(FL01-A001)	NB	Duval	8th St/Exit 353D	102P05114	1.3	30.33987	-81.66799	-1.55%
F2	I-95	Florida	FL-115/FL-117/Exit 356	102P05118	3	30.3808026	-81.67337	1.13
(FL01-A004)	NB	Duval	Trout River Brg	102P05119	1.1	30.3945832	-81.667895	7.51%
F3	I-95	Florida	Clark Rd	102+05122	4	30.412245	-81.657042	1.51
(FL01-A006)	NB	Duval	I-295/FL-9A/Exit 362	102P05123	1.5	30.4343726	-81.6557346	-1.08%
F4	I-95	Florida	I-295/FL-9A/Exit 362	102+05124	1	30.4343726	-81.6557346	1.54
(102+05124)	NB	Duval	I-295/FL-9A/Exit 362	-	1.5	30.4556198	-81.6504296	2.67%
F5	I-95	Florida	I-295/FL-9A/Exit 362	102P05124	4	30.4556198	-81.6504296	4.01
(FL01-A007)	SB	Duval	Pecan Park Rd/Exit 366	102+05126	4.1	30.513085	-81.634487	-2.10%
F6	I-95	Florida	FL-102/Duval Rd/Exit 363	102-05125	4	30.511925	-81.63461	4.09
(FL01-A008)	SB	Duval	FL-104/Busch Dr/Dunn Ave/Exit 360	102N05124	4.1	30.4539316	-81.651203	-1.10%
F7	I-95	Florida	FL-104/Busch Dr/Dunn Ave/Exit 360	102-05123	1	30.4539316	-81.651203	1.46
(102-05123)	SB	Duval	FL-104/Busch Dr/Dunn Ave/Exit 360	-	1.4	30.434562	-81.656034	6.79%
F8	I-95	Florida	FL-104/Busch Dr/Dunn Ave/Exit 360	102N05123	2	30.434562	-81.656034	1.35
(FL01-A009)	SB	Duval	Clark Rd	102-05122	1.4	30.4142146	-81.6572186	-3.82%
F9	I-95	Florida	Clark Rd	102N05122	6	30.4142146	-81.6572186	1.69
(FL01-A010)	SB	Duval	FL-111/Edgewood Ave/Exit 357	102-05119	1.6	30.395276	-81.6681318	7.69%
F10	I-95	Florida	Golfair Blvd/Exit 355	102N05116	4	30.359259	-81.668739	1.29
(FL01-A013)	SB	Duval	US-23/Kings Rd/Exit 353C	102-05114	1.4	30.339612	-81.668341	-4.76%
F11	I-95	Florida	US-23/Kings Rd/Exit 353C	102N05114	8	30.339612	-81.668341	1.17
(FL01-A014)	SB	Duval	Myrtle Ave/Exit 352A	102-05110	1.1	30.3271666	-81.6792648	6.39%
TOTALS				-	45	-	-	20.53
				-	20.4	-	-	-

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

SEGMENT (Map Link)	DESCRIPTION			TMC CODES		Deployment		
	Highway Direction	State County	Starting at Ending at	Begin End	Number Length	Begin Lat/Lon End Lat/Lon		Length % Diff
FREEWAYS								All Lengths in Miles
F12	I-95	Florida	FL-84/SW 25th St/Exit 25	102P04129	2	26.08274	-80.1684894	1.48
(FL01-B001)	NB	Broward	FL-736/Davie Blvd/Exit 26	102+04130	1.3	26.1014298	-80.1687294	14.90%
F13	I-95	Florida	FL-736/Davie Blvd/Exit 26	102P04130	2	26.1014298	-80.1687294	1.22
(FL01-B002)	NB	Broward	FL-842/Broward Blvd/Exit 27	102+04131	1.4	26.1216162	-80.16855	-12.25%
F14	I-95	Florida	FL-842/Broward Blvd/Exit 27	102P04131	3	26.1216162	-80.16855	1.44
(FL01-B003)	NB	Broward	FL-816/NW 31st St/Exit 31	102P04132	1.5	26.14342	-80.169515	-4.22%
F15	I-95	Florida	FL-816/NW 31st St/Exit 31	102+04133	1	26.14342	-80.169515	1.39
(102+04133)	NB	Broward	FL-816/NW 31st St/Exit 31		1.4	26.1622508	-80.1622626	0.23%
F16	I-95	Florida	FL-816/NW 31st St/Exit 31	102P04133	2	26.1622508	-80.1622626	1.73
(FL01-B004)	NB	Broward	FL-870/Commercial Blvd/Exit 32	102+04134	1.4	26.1813904	-80.152946	19.96%
F17	I-95	Florida	FL-870/Commercial Blvd/Exit 32	102P04134	3	26.1813904	-80.152946	2.23
(FL01-B005)	NB	Broward	FL-814/Atlantic Blvd/Exit 36	102P04136	2.3	26.2101736	-80.1374214	-3.06%
F18	I-95	Florida	FL-814/Atlantic Blvd/Exit 36	102+04137	2	26.2101736	-80.1374214	1.87
(FL01-B007)	NB	Broward	Copans Rd/Exit 38	102P04137	1.8	26.236471	-80.136373	2.61%
F19	I-95	Florida	FL-814/Atlantic Blvd/Exit 36	102-04137	1	26.254227	-80.136769	1.19
(102-04137)	SB	Broward	FL-814/Atlantic Blvd/Exit 36		1.2	26.236713	-80.136624	-1.32%
F20	I-95	Florida	FL-814/Atlantic Blvd/Exit 36	102N04137	2	26.236713	-80.136624	2.02
(FL01-B008)	SB	Broward	Cypress Creek Rd/Exit 33	102-04136	2.0	26.20779	-80.139585	-1.05%
F21	I-95	Florida	Cypress Creek Rd/Exit 33	102N04136	3	26.20779	-80.139585	1.24
(FL01-B009)	SB	Broward	FL-870/Commercial Blvd/Exit 32	102N04135	1.1	26.1953694	-80.1510698	10.44%
F22	I-95	Florida	FL-870/Commercial Blvd/Exit 32	102-04134	3	26.1953694	-80.1510698	1.51
(FL01-B010)	SB	Broward	FL-816/NW 31st St/Exit 31	102-04133	1.7	26.1713218	-80.157703	-12.35%
F23	I-95	Florida	FL-816/NW 31st St/Exit 31	102N04133	2	26.1713218	-80.157703	2.06
(FL01-B011)	SB	Broward	FL-838/Sunrise Blvd/Exit 29	102-04132	2.1	26.143465	-80.169821	-0.93%
F24	I-95	Florida	FL-838/Sunrise Blvd/Exit 29	102N04132	3	26.143465	-80.169821	1.67
(FL01-B012)	SB	Broward	FL-736/Davie Blvd/Exit 26	102N04131	1.5	26.121611	-80.1689716	10.81%
F25	I-95	Florida	FL-84/SW 25th St/Exit 25	102N04130	3	26.094379	-80.1687766	1.9
(FL01-B014)	SB	Broward	FL-84/SW 25th St/Exit 25	102N04129	1.6	26.083794	-80.168711	19.88%
TOTALS				-	32	-	-	22.95
				-	22.4	-	-	-

Analysis of Freeway Results

Table 2 summarizes the data quality measures obtained as a result of comparison between Bluetooth and all reported INRIX speeds. Specifications 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: 0-30 MPH, 30-45 MPH, 45-60 MPH, and > 60 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, and are highlight in Table 2. AASE below 10 MPH meet contract specifications. AASE below 5 MPH are considered exceptional quality. As shown, the average absolute speed error (AASE) and Speed Error Bias (SEB) were within specification for all speed bins.

TABLE 2
Data quality measures for freeway segments greater than one mile in Florida

SPEED BIN	Data Quality Measures for				No. of 5 Minute Samples	Hours of Data Collection
	1.96 SEM Band		Mean			
	SEB 5 mph (contract specifications)	AASE 10 mph	SEB	AASE		
0-30	2.5	3.4	3.3	4.8	710	59
30-45	4.6	5.5	6.3	8	1439	120
45-60	2.8	3.1	5.1	6	9119	760
60+	0.1	1.2	0.1	3.7	24987	2082

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 freeway data segments in Florida.

Table 3
Percent observations meeting data quality criteria for freeway segments greater than one mile in Florida

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	
0-30	29%	78%	0%	70%	710
30-45	22%	59%	0%	42%	1439
45-60	33%	74%	0%	46%	9119
60+	57%	93%	0%	73%	24987

The Score metric in the VPP data provides an indication on whether speed data is based on real-time information or relies primarily on historical data. Three discrete values correspond to:

"30" – high confidence, based on real-time time data for that specific segment

"20" – medium confidence, based on real-time data across multiple segments and/or based on a combination of expected and real-time data

"10" – low confidence, based primarily on historical data

Score less than "30" is an indication of reliance on some type of historical data or averaging of data across a broad geographic area. Table 4 presents AASE and SEB data on reported INRIX speeds with a score less than 25, greater than or equal to 25, and for all Score values. (Note that although Score is a discrete value of 10, 20, or 30 for any given TMC segment at a given time, aggregating the data from multiple TMC segments over time creates rational values of Score between 10 and 30.)

Table 4
Data quality measures by Score Value for INRIX speed data on freeway segment in Florida

SPEED BIN	SCORE	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	
0-30	< 25	-	-	-	-	0
	>= 25	2.5	3.4	3.3	4.8	710
	ALL	2.5	3.4	3.3	4.8	710
30-45	< 25	-	-	-	-	0
	>= 25	4.6	5.5	6.3	8.0	1439
	ALL	4.6	5.5	6.3	8.0	1439
45-60	< 25	1.0	1.0	9.3	9.3	5*
	>= 25	2.8	3.1	5.1	6.0	9114
	ALL	2.8	3.1	5.1	6.0	9119
60+	< 25	-0.9	1.1	-2.5	3.9	174
	>= 25	0.1	1.2	0.1	3.7	24813
	ALL	0.1	1.2	0.1	3.7	24987

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

Tables 5 and 6 present detailed data for individual TMC segments in Florida 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 small number of observations.

Table 5
Data quality measures for individual freeway validation segments greater than one mile in the state of Florida

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	
102+04133	1.4	1.4	0-30	3.8	4.5	4.4	5.8	38
			30-45	3.4	5.8	4.1	7.8	55
			45-60	5.0	5.3	7.1	7.5	394
			60+	1.6	1.9	3.1	4.0	1439
102+05124	1.5	1.5	0-30					
			30-45	6.1	6.1	20.8	20.8	1*
			45-60	2.8	2.8	9.4	9.4	30
			60+	-0.7	1.3	-1.6	3.9	1598
102-04137	1.2	1.2	0-30	7.0	9.6	8.9	12.1	17*
			30-45	6.4	7.0	9.9	11.7	52
			45-60	4.3	4.4	7.7	8.0	301
			60+	1.7	1.8	4.2	4.5	289
102-05123	1.4	1.5	0-30	22.8	22.8	24.1	24.1	1*
			30-45	7.6	8.6	6.3	12.1	3*
			45-60	2.4	6.7	4.6	9.4	9*
			60+	-1.2	1.6	-2.7	4.4	1195
FL01-A001	1.3	1.3	0-30					
			30-45	0.0	0.0	-2.9	6.5	2*
			45-60	1.2	1.2	3.1	3.4	704
			60+	-0.4	0.7	-1.4	2.7	687
FL01-A004	1.1	1.1	0-30					
			30-45					
			45-60	2.0	2.0	4.7	4.8	404
			60+	0.1	0.8	0.0	2.6	1752
FL01-A006	1.5	1.5	0-30					
			30-45					
			45-60	0.6	0.6	6.1	6.1	5*
			60+	-1.4	1.5	-3.6	4.7	907
FL01-A007	4.1	4.0	0-30					
			30-45					
			45-60	0.1	0.1	5.3	5.3	3*
			60+	-0.7	1.2	-1.3	3.6	109
FL01-A008	4.1	4.1	0-30					
			30-45					
			45-60	1.7	1.7	8.4	8.4	7*
			60+	-1.5	1.7	-3.5	4.4	681

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

Table 5 (Cont'd)
Data quality measures for individual freeway validation segments greater than one mile in the state of Florida

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	
FL01-A009	1.4	1.4	0-30					
			30-45	12.0	12.0	21.1	21.1	1*
			45-60	2.5	2.5	7.3	7.3	28*
			60+	-0.5	1.2	-1.1	3.8	1987
FL01-A010	1.6	1.7	0-30					
			30-45					
			45-60	2.8	2.8	6.4	6.4	70
			60+	0.0	0.9	-0.3	3.1	1744
FL01-A013	1.4	1.3	0-30	6.9	6.9	8.2	8.2	19*
			30-45	5.7	6.7	7.5	9.1	52
			45-60	1.5	1.6	3.5	3.9	865
			60+	-0.1	0.8	-0.4	2.7	967
FL01-A014	1.1	1.2	0-30	4.9	4.9	6.2	6.2	15*
			30-45	1.1	4.4	1.7	6.8	68
			45-60	0.1	0.7	0.2	2.7	1738
			60+	-1.6	1.7	-4.6	5.0	900
FL01-B001	1.3	1.5	0-30	3.7	4.1	4.5	5.3	55
			30-45	9.4	9.4	12.5	12.7	35
			45-60	3.9	4.0	7.5	7.8	357
			60+	0.9	1.1	2.8	3.9	574
FL01-B002	1.4	1.2	0-30	2.5	3.2	3.7	4.9	141
			30-45	4.8	4.9	11.0	11.7	78
			45-60	4.2	4.5	8.4	9.0	322
			60+	0.8	1.1	3.0	4.0	522
FL01-B003	1.5	1.4	0-30	2.7	3.0	3.4	4.5	35
			30-45	2.2	3.7	2.6	5.5	94
			45-60	2.8	3.4	4.8	6.0	387
			60+	0.0	0.8	-0.2	3.3	1503
FL01-B004	1.4	1.7	0-30	1.2	2.0	1.4	2.9	103
			30-45	4.5	5.0	5.3	6.4	156
			45-60	3.7	4.1	6.3	7.0	284
			60+	0.5	1.1	1.0	3.4	1384
FL01-B005	2.3	2.2	0-30	0.8	2.4	1.0	3.5	36
			30-45	4.0	4.8	4.8	6.5	172
			45-60	3.3	3.5	6.1	6.5	511
			60+	0.7	0.9	2.0	3.3	1096
FL01-B007	1.8	1.9	0-30	1.8	3.1	2.5	4.2	39
			30-45	4.8	6.5	5.7	8.0	57
			45-60	4.1	4.5	6.6	7.2	169
			60+	0.4	1.0	0.7	3.3	1500

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

Table 5 (Cont'd)
Data quality measures for individual freeway validation segments greater than one mile in the state of Florida

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	
FL01-B008	2.0	2.0	0-30	1.8	2.8	2.5	4.2	43
			30-45	5.0	5.8	6.6	8.3	87
			45-60	3.4	4.3	5.4	6.7	257
			60+	0.4	1.2	0.9	3.5	1571
FL01-B009	1.1	1.2	0-30	2.6	3.6	3.5	5.5	81
			30-45	6.1	7.3	7.9	10.3	124
			45-60	4.6	4.9	8.5	9.1	371
			60+	0.7	1.0	2.1	3.9	594
FL01-B010	1.7	1.5	0-30	0.6	1.6	1.0	3.1	19*
			30-45	3.9	4.6	5.4	7.1	93
			45-60	3.0	3.2	6.2	6.7	450
			60+	0.3	0.8	1.1	3.3	661
FL01-B011	2.1	2.1	0-30	0.8	2.7	1.0	4.7	13*
			30-45	3.8	4.0	4.9	6.4	55
			45-60	5.7	5.7	8.7	8.8	727
			60+	2.2	2.2	4.8	5.2	609
FL01-B012	1.5	1.7	0-30	2.6	2.9	3.5	4.4	35
			30-45	5.6	5.7	7.9	8.3	88
			45-60	4.2	4.2	8.1	8.2	261
			60+	0.9	1.0	3.0	3.8	283
FL01-B014	1.6	1.9	0-30	2.4	2.5	3.1	3.6	20*
			30-45	4.9	5.2	7.0	7.9	166
			45-60	5.3	5.3	9.3	9.4	465
			60+	1.5	1.5	3.9	4.4	435

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

Table 6
Observations meeting data quality criteria for individual freeway validation segments greater than one mile in the state of Florida

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	
102+04133	0-30	7	18%	26	68%	0	0%	24	63%	38
	30-45	13	24%	30	55%	0	0%	23	42%	55
	45-60	25	6%	197	50%	0	0%	88	22%	394
	60+	593	41%	1282	89%	0	0%	963	67%	1439
102+05124	0-30									
	30-45	0	0%	0	0%	0	0%	0	0%	1*
	45-60	11	37%	22	73%	0	0%	5	17%	30
	60+	940	59%	1469	92%	1	0%	1053	66%	1598
102-04137	0-30	3	18%	8	47%	0	0%	6	35%	17*
	30-45	13	25%	23	44%	0	0%	12	23%	52
	45-60	51	17%	185	61%	0	0%	58	19%	301
	60+	125	43%	253	88%	0	0%	179	62%	289
102-05123	0-30	0	0%	0	0%	0	0%	0	0%	1*
	30-45	1	33%	2	67%	0	0%	1	33%	3*
	45-60	0	0%	3	33%	0	0%	2	22%	9*
	60+	597	50%	1072	90%	0	0%	729	61%	1195
FL01-A001	0-30									
	30-45	2	100%	2	100%	0	0%	1	50%	2*
	45-60	371	53%	663	94%	2	0%	544	77%	704
	60+	450	66%	669	97%	0	0%	584	85%	687
FL01-A004	0-30									
	30-45									
	45-60	147	36%	352	87%	0	0%	238	59%	404
	60+	1131	65%	1698	97%	0	0%	1526	87%	1752
FL01-A006	0-30									
	30-45									
	45-60	3	60%	5	100%	0	0%	1	20%	5*
	60+	497	55%	813	90%	0	0%	544	60%	907
FL01-A007	0-30									
	30-45									
	45-60	2	67%	3	100%	0	0%	1	33%	3*
	60+	60	55%	105	96%	0	0%	75	69%	109
FL01-A008	0-30									
	30-45									
	45-60	4	57%	6	86%	0	0%	2	29%	7*
	60+	329	48%	602	88%	0	0%	408	60%	681
FL01-A009	0-30									
	30-45	0	0%	0	0%	0	0%	0	0%	1*
	45-60	9	32%	21	75%	0	0%	10	36%	28*
	60+	1114	56%	1855	93%	4	0%	1407	71%	1987

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Table 6 (Cont'd)
Observations meeting data quality criteria for individual freeway validation segments greater than one mile in the state of Florida

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	
FL01-A010	0-30									
	30-45									
	45-60	22	31%	54	77%	0	0%	22	31%	70
	60+	1084	62%	1679	96%	0	0%	1414	81%	1744
FL01-A013	0-30	3	16%	11	58%	0	0%	7	37%	19*
	30-45	7	13%	25	48%	0	0%	19	37%	52
	45-60	394	46%	780	90%	1	0%	632	73%	865
	60+	623	64%	935	97%	0	0%	818	85%	967
FL01-A014	0-30	4	27%	8	53%	0	0%	7	47%	15*
	30-45	18	26%	42	62%	0	0%	32	47%	68
	45-60	1184	68%	1682	97%	1	0%	1523	88%	1738
	60+	376	42%	816	91%	0	0%	482	54%	900
FL01-B001	0-30	16	29%	40	73%	0	0%	38	69%	55
	30-45	4	11%	10	29%	0	0%	6	17%	35
	45-60	82	23%	236	66%	0	0%	71	20%	357
	60+	362	63%	528	92%	0	0%	405	71%	574
FL01-B002	0-30	40	28%	108	77%	0	0%	97	69%	141
	30-45	16	21%	46	59%	0	0%	20	26%	78
	45-60	52	16%	195	61%	0	0%	43	13%	322
	60+	305	58%	491	94%	0	0%	351	67%	522
FL01-B003	0-30	11	31%	29	83%	0	0%	26	74%	35
	30-45	22	23%	70	74%	0	0%	62	66%	94
	45-60	84	22%	272	70%	0	0%	167	43%	387
	60+	980	65%	1446	96%	6	0%	1191	79%	1503
FL01-B004	0-30	23	22%	92	89%	0	0%	88	85%	103
	30-45	32	21%	103	66%	0	0%	84	54%	156
	45-60	48	17%	187	66%	0	0%	86	30%	284
	60+	786	57%	1303	94%	0	0%	1062	77%	1384
FL01-B005	0-30	9	25%	30	83%	0	0%	29	81%	36
	30-45	54	31%	114	66%	0	0%	96	56%	172
	45-60	88	17%	360	70%	0	0%	170	33%	511
	60+	674	62%	1054	96%	0	0%	875	80%	1096
FL01-B007	0-30	11	28%	30	77%	0	0%	26	67%	39
	30-45	7	12%	31	54%	0	0%	22	39%	57
	45-60	19	11%	104	62%	0	0%	41	24%	169
	60+	917	61%	1423	95%	3	0%	1154	77%	1500
FL01-B008	0-30	14	33%	37	86%	0	0%	31	72%	43
	30-45	12	14%	46	53%	0	0%	26	30%	87
	45-60	30	12%	166	65%	0	0%	87	34%	257
	60+	887	56%	1467	93%	0	0%	1187	76%	1571

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Table 6 (Cont'd)
Observations meeting data quality criteria for individual freeway validation segments greater than one mile in the state of Florida

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	
FL01-B009	0-30	27	33%	64	79%	0	0%	55	68%	81
	30-45	26	21%	56	45%	0	0%	34	27%	124
	45-60	68	18%	208	56%	0	0%	63	17%	371
	60+	393	66%	560	94%	1	0%	423	71%	594
FL01-B010	0-30	9	47%	16	84%	0	0%	16	84%	19*
	30-45	22	24%	58	62%	0	0%	46	49%	93
	45-60	129	29%	333	74%	0	0%	159	35%	450
	60+	471	71%	630	95%	0	0%	517	78%	661
FL01-B011	0-30	7	54%	10	77%	0	0%	9	69%	13*
	30-45	18	33%	38	69%	0	0%	30	55%	55
	45-60	54	7%	298	41%	0	0%	80	11%	727
	60+	219	36%	517	85%	0	0%	301	49%	609
FL01-B012	0-30	18	51%	29	83%	0	0%	25	71%	35
	30-45	18	20%	49	56%	0	0%	35	40%	88
	45-60	43	16%	163	62%	0	0%	42	16%	261
	60+	168	59%	269	95%	0	0%	202	71%	283
FL01-B014	0-30	4	20%	15	75%	0	0%	15	75%	20*
	30-45	36	22%	99	60%	0	0%	62	37%	166
	45-60	64	14%	232	50%	0	0%	49	11%	465
	60+	244	56%	396	91%	0	0%	276	63%	435

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