I-95 Corridor Coalition

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

Report for New Jersey (#13)
New Jersey Route 37

I-95 CORRIDOR COALITION

November 2015

I-95 CORRIDOR COALITION VEHICLE PROBE PROJECT VALIDATION OF INRIX DATA NOVEMBER 2015

Report for New Jersey (#13)
New Jersey Route 37

Prepared for:

I-95 Corridor Coalition

Sponsored by:

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Evaluation Results for the State of New Jersey

Executive Summary

The data from the Vehicle Probe Project is validated using Bluetooth™ 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 eighteen different segments along the NJ-37 corridor. Number of lanes varies between 2 and 3 per direction with average signal density of 1 signal per mile. Average Annual Daily Traffic (AADT) along the corridor is 37,550 and the speed limit is 50 MPH.

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The Bluetooth sensor deployment covers the range from NJ-35 to Colonial Dr. along NJ-37. Travel time data was collected for both directions along the arterial, between June 30 and July 12, 2015. The dataset collected represents approximately 2,923 hours of observations along 18 arterial segments, totaling approximately 23 miles. The total number of effective five-minute travel time samples observed was 35,076. Due to data quality considerations, seven segments were dropped from final validation.

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 within specifications for all speed bins when compared with the Standard Error of the Mean (SEM) Band. 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 - New Jersey 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	4.8	6.7	4.8	6.4	248	21
15-25 MPH	5.0	9.7	4.8	8.9	2888	241
25-35 MPH	2.8	8.1	2.4	6.3	10725	894
>35 MPH	1.6	6.0	-0.5	-0.4	16043	1337
All Speeds	3.3	8.0	2.6	5.4	29904	2492

Based upon data collected from June 30, 2015 through July 12, 2015 across 23 miles of roadway.

Data Collection

Travel time samples were collected along 18 arterial segments with the assistance of New Jersey Department of Transportation (NJDOT) personnel. Arterial segments studied were located along the NJ-37 corridor from NJ-35 to Colonial Dr. Travel time data was collected for both directions along the NJ-37 arterial between June 30 and July 12, 2015. Segment locations were chosen with a high-likelihood of observing recurrent and non-recurrent congestion during peak and off-peak periods.

Figure 1 presents an overview snapshot of the placement of sensors for the collection of data on the NJ-37 corridor in New Jersey. Red segments represent arterial segments selected for analysis. Number of lanes varies between 2 and 3 per direction with average signal density of 1 signal per mile. Average Annual Daily Traffic (AADT) along the corridor is 37,550 and the speed limit is 50 MPH.

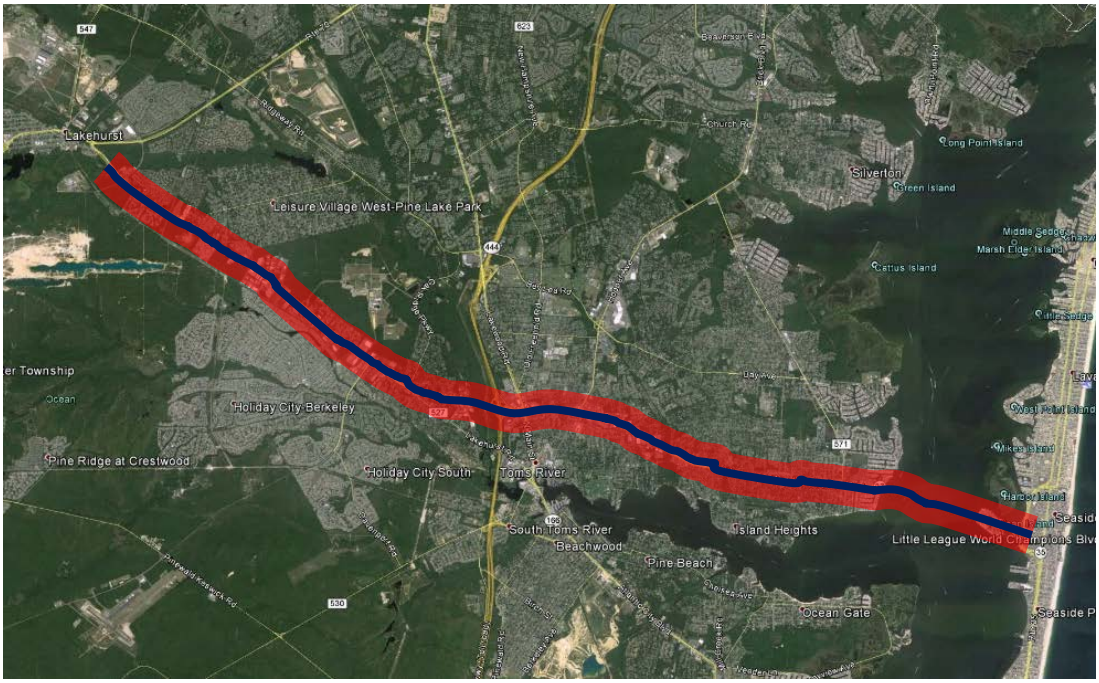

Figure 1 — Locations of all segments selected for analysis in New Jersey

TMC segments selected for validation in New Jersey

Table 1 presents the data collection segments from New Jersey. As a whole, these segments cover a total length of 23 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 one mile long or greater for arterials. When appropriate, consecutive TMC segments are combined to form a data collection segment longer than one mile. Due to data quality considerations, seven of the 18 segments were dropped from final validation. Therefore, the results of the validation performed on 11 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 the NJ-37 in New Jersey 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 Bluetooth™ Traffic Monitoring (BTM) sensors placed on the roadway. An algorithm was developed and documented in a separate report[1] 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 Hamedi, 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 New Jersey

SEGMENT (Map Link)	DESCRIPTION Highway New Jersey	State County	Starting at Ending at	TMC CODES Begin End	Length Number	Deployment Begin Lat/Lon End Lat/Lon		Length % Diff
Arterials								All Lengths in Miles
A4	NJ-37	New Jersey	Coolidge Ave	120+07544	0.72	39.951025	-74.139699	0.72
NJ13-0004	Westbound	Ocean	Vaughn Ave	120P07544	2	39.952420	-74.153002	-0.2%
A5	NJ-37	New Jersey	Vaughn Ave	120+07545	0.51	39.952420	-74.153002	0.51
NJ13-0005	Westbound	Ocean	Washington St	120P07545	2	39.954342	-74.162214	0.9%
A8	NJ-37	New Jersey	Clifton Ave	120+07548	0.58	39.950214	-74.124077	0.56
NJ13-0008	Westbound	Ocean	Hooper Ave	120+07549	3	39.950549	-74.131010	-3.4%
A9	NJ-37	New Jersey	Hooper Ave	120P07549	0.71	39.950549	-74.131010	0.70
NJ13-0009	Westbound	Ocean	NJ-166/Main St	120+07550	2	39.951025	-74.139699	-1.8%
A10	NJ-37	New Jersey	NJ-166/Main St	120P07550	1.48	39.951025	-74.139699	0.90
NJ13-0010	Westbound	Ocean	Hospital Dr	120+10495	4	39.952420	-74.153002	-39.3%
A11	NJ-37	New Jersey	Hospital Dr	120+10495	0.99	39.952420	-74.153002	0.64
NJ13-0011	Westbound	Ocean	Oak Ridge Pkwy	120P10495	2	39.954342	-74.162214	-35.6%
A12	NJ-37	New Jersey	Oak Ridge Pkwy	120+10494	2.55	39.954342	-74.162214	0.77
NJ13-0012	Westbound	Ocean	Rubelle Pl	120+13245	3	39.957649	-74.169999	-69.8%
A14	NJ-37	New Jersey	Romana Ln	120+13245	1.97	39.960685	-74.177189	0.55
NJ13-0014	Westbound	Ocean	Chemical Corp Entrance Rd	120+13245	1	39.963570	-74.187499	-72.1%
A15	NJ-37	New Jersey	Chemical Corp Entrance Rd	120+13245	1.97	39.963570	-74.187499	0.90
NJ13-0015	Westbound	Ocean	Northampton Blvd	120+13245	1	39.963683	-74.200637	-54.3%
A16	NJ-37	New Jersey	Northampton Blvd	120P13245	0.80	39.963683	-74.200637	0.82
NJ13-0016	Westbound	Ocean	Commonwealth Blvd	120+10493	2	39.965783	-74.217358	2.2%
A17	NJ-37	New Jersey	Commonwealth Blvd	120P10493	1.76	39.965783	-74.217358	0.66
NJ13-0017	Westbound	Ocean	Buckingham Dr	120+10491	2	39.967673	-74.228553	-62.5%

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

SEGMENT (Map Link)	DESCRIPTION Highway New Jersey	State County	Starting at Ending at	TMC CODES Begin End	Number Length	Deployment Begin Lat/Lon End Lat/Lon		Length % Diff
Arterials								All Lengths in Miles
A20	NJ-37	New Jersey	Buckingham Dr	120-10493	1.78	39.960685	-74.177189	0.66
NJ13-0020	Eastbound	Ocean	Commonwealth Blvd	120N10493	2	39.963570	-74.187499	-62.89%
A21	NJ-37	New Jersey	Commonwealth Blvd	120-13245	0.80	39.963570	-74.187499	0.82
NJ13-0021	Eastbound	Ocean	Northampton Blvd	120N13245	2	39.963683	-74.200637	2.05%
A22	NJ-37	New Jersey	Northampton Blvd	120-10494	1.89	39.963683	-74.200637	0.90
NJ13-0022	Eastbound	Ocean	Chemical Corp Entrance Rd	120-10494	1	39.965783	-74.217358	-52.34%
A23	NJ-37	New Jersey	Chemical Corp Entrance Rd	120-10494	1.89	39.965783	-74.217358	0.55
NJ13-0023	Eastbound	Ocean	Romana Ln	120-10494	1	39.967673	-74.228553	-70.87%
A25	NJ-37	New Jersey	Rubelle Pl	120-10494	2.58	39.974214	-74.240690	0.77
NJ13-0025	Eastbound	Ocean	Oak Ridge Pkwy	120N10495	4	39.976978	-74.245584	-70.17%
A26	NJ-37	New Jersey	Oak Ridge Pkwy	120-07551	0.95	39.976978	-74.245584	0.64
NJ13-0026	Eastbound	Ocean	Hospital Dr	120-07551	1	39.982305	-74.252962	-32.44%
A27	NJ-37	New Jersey	Hospital Dr	120-07551	1.49	39.982305	-74.252962	0.90
NJ13-0027	Eastbound	Ocean	NJ-166/Main St	120-07550	3	39.990116	-74.266576	-39.62%
A28	NJ-37	New Jersey	NJ-166/Main St	120N07550	0.70	39.990116	-74.266576	0.70
NJ13-0028	Eastbound	Ocean	Hooper Ave	120N07549	3	39.996521	-74.279476	-0.70%
A29	NJ-37	New Jersey	Hooper Ave	120-07548	0.59	39.996521	-74.279476	0.56
NJ13-0029	Eastbound	Ocean	Clifton Ave	120-07547	3	40.001753	-74.290070	-4.6%
A32	NJ-37	New Jersey	Washington St	120N07545	0.51	39.976978	-74.245584	0.51
NJ13-0032	Eastbound	Ocean	Vaughn Ave	120N07544	3	39.982305	-74.252962	0.2%
A33	NJ-37	New Jersey	Vaughn Ave	120-07543	0.74	39.982305	-74.252962	0.72
NJ13-0033	Eastbound	Ocean	Coolidge Ave	120-07543	1	39.990116	-74.266576	-2.2%

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 95^{th} 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 within specifications for all speed bins when compared with the Standard Error of the Mean (SEM) Band.

TABLE 2 Data quality measures for arterial segments in New Jersey

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 (contract specifications)	SEB	AASE		
0-15	4.8	4.8	6.4	6.7	248	21
15-25	4.8	5.0	8.9	9.7	2888	241
25-35	2.4	2.8	6.3	8.1	10725	894
35+	-0.5	1.6	-0.4	6.0	16043	1337

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 New Jersey

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	19%	68%	0%	56%	248
15-25	29%	59%	0%	28%	2888
25-35	48%	76%	0%	35%	10725
35+	66%	88%	0%	50%	16043

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 New Jersey

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	
NJ13-0004	0.72	0.72	0-15	5.4	5.4	6.3	6.6	5*
			15-25	8.8	8.8	15.9	16.1	21*
			25-35	2.6	2.8	7.1	8.1	581
			35+	-0.8	1.8	-1.1	6.2	1542
NJ13-0005	0.50	0.51	0-15	17.2	17.2	18.8	19.1	8*
			15-25	6.8	6.8	11.6	11.7	422
			25-35	3.0	3.2	7.8	8.6	1218
			35+	-0.1	1.6	1.1	6.5	498
NJ13-0008	0.58	0.56	0-15	3.2	3.3	4.4	5.0	61
			15-25	1.0	1.8	1.9	5.2	428
			25-35	-0.8	1.2	-2.4	5.4	1011
			35+	-3.9	4.0	-8.9	9.5	562
NJ13-0009	0.71	0.70	0-15	3.5	3.6	5.7	5.8	18*
			15-25	4.7	4.9	8.1	8.9	297
			25-35	2.4	2.8	5.4	7.5	872
			35+	0.1	1.6	0.4	5.9	587
NJ13-0010	089	0.90	0-15	-	-	-	-	-
			15-25	7.5	7.5	13.5	13.5	7*
			25-35	1.6	1.7	5.9	6.6	357
			35+	-0.6	1.1	-1.7	5.4	820
NJ13-0011	062	0.64	0-15	-	-	-	-	-
			15-25	9.4	9.4	15.2	15.2	18*
			25-35	4.1	4.4	8.2	9.1	587
			35+	0.7	1.7	2.6	6.1	489
NJ13-0012	0.78	0.77	0-15	26.0	26.0	37.1	37.1	2*
			15-25	5.8	5.8	10.6	10.8	165
			25-35	3.0	3.3	6.8	7.9	541
			35+	-0.1	0.9	0.9	5.3	312
NJ13-0014	0.56	0.55	0-15	-	-	-	-	-
			15-25	7.1	7.1	14.8	14.8	19*
			25-35	3.4	3.5	10.2	10.6	333
			35+	0.2	1.1	2.0	5.7	533
NJ13-0015	0.90	0.90	0-15	-	-	-	-	-
			15-25	4.3	4.3	21.2	21.2	4*
			25-35	1.7	1.9	7.8	8.9	56
			35+	-1.3	1.6	-2.7	5.7	699
NJ13-0016	0.80	0.82	0-15	-	-	-	-	-
			15-25	-	-	-	-	-
			25-35	4.0	4.0	14.6	14.8	62
			35+	0.0	1.4	1.0	5.6	1305
NJ13-0017	0.68	0.66	0-15	-	-	-	-	-
			15-25	0.0	0.0	14.8	14.8	1*
			25-35	2.0	2.0	9.9	10.1	10*
			35+	-1.1	1.6	-2.3	5.4	1607

*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 New Jersey

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	
NJ13-0020	0.68	0.66	0-15	-	-	-	-	-
			15-25	15.5	15.5	20.9	20.9	3*
			25-35	2.3	2.3	12.4	12.4	112
			35+	-1.0	1.3	-1.6	6.3	1021
NJ13-0021	0.80	0.82	0-15	-	-	-	-	-
			15-25	12.4	12.4	28.9	28.9	3*
			25-35	4.5	4.7	14.8	15.7	55
			35+	0.8	1.9	3.7	7.2	1042
NJ13-0022	0.90	0.90	0-15	-	-	-	-	-
			15-25	1.5	1.5	10.7	10.7	6*
			25-35	0.9	1.0	5.7	6.7	157
			35+	-0.8	1.2	-2.1	6.0	490
NJ13-0023	0.56	0.55	0-15	-	-	-	-	-
			15-25	3.3	3.3	10.6	10.6	28*
			25-35	1.3	1.3	6.1	7.0	228
			35+	-0.6	0.9	-1.1	5.3	462
NJ13-0025	0.79	0.77	0-15	-	-	-	-	-
			15-25	3.8	3.9	7.6	7.9	418
			25-35	2.0	2.2	5.7	6.9	419
			35+	-0.5	0.7	-2.0	5.4	104
NJ13-0026	0.63	0.64	0-15	21.7	21.7	31.0	31.0	1*
			15-25	10.1	10.1	20.4	20.4	10*
			25-35	4.9	5.0	10.8	11.0	339
			35+	1.3	1.7	4.2	6.0	578
NJ13-0027	0.89	0.90	0-15	6.0	6.0	9.4	9.4	10*
			15-25	3.4	3.4	9.0	9.2	136
			25-35	0.9	1.4	2.6	5.2	506
			35+	-1.8	2.0	-4.7	6.7	316
NJ13-0028	0.70	0.70	0-15	3.7	3.7	4.8	5.0	125
			15-25	3.8	4.0	7.1	7.8	360
			25-35	1.8	2.2	4.7	6.6	926
			35+	-0.6	1.3	-0.9	5.6	230
NJ13-0029	0.59	0.56	0-15	7.3	7.3	13.9	13.9	6*
			15-25	4.3	4.4	9.8	10.2	242
			25-35	1.8	2.2	5.5	7.4	1060
			35+	-0.7	1.2	-1.4	5.9	564
NJ13-0032	0.51	0.51	0-15	-	-	-	-	-
			15-25	9.5	9.6	15.4	15.5	294
			25-35	5.1	5.2	11.2	11.5	1043
			35+	0.8	1.6	3.6	6.5	686
NJ13-0033	0.74	0.72	0-15	10.0	10.0	12.8	12.8	12*
			15-25	13.4	13.4	19.8	19.8	6*
			25-35	3.1	3.4	9.7	10.5	252
			35+	-0.5	1.4	0.3	5.3	1596

*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 New Jersey

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	
NJ13-0004	0-15	2	40%	4	80%	0	0%	4	80%	5*
	15-25	4	19%	7	33%	0	0%	2	10%	21*
	25-35	281	48%	446	77%	0	0%	207	36%	581
	35+	1028	67%	1323	86%	1	0%	804	52%	1542
NJ13-0005	0-15	1	13%	2	25%	0	0%	2	25%	8*
	15-25	61	14%	174	41%	0	0%	51	12%	422
	25-35	519	43%	883	73%	0	0%	361	30%	1218
	35+	318	64%	434	87%	0	0%	228	46%	498
NJ13-0008	0-15	13	21%	47	77%	0	0%	41	67%	61
	15-25	230	54%	372	87%	0	0%	235	55%	428
	25-35	664	66%	914	90%	0	0%	537	53%	1011
	35+	257	46%	387	69%	0	0%	160	28%	562
NJ13-0009	0-15	5	28%	13	72%	0	0%	9	50%	18*
	15-25	94	32%	185	62%	0	0%	102	34%	297
	25-35	401	46%	678	78%	0	0%	336	39%	872
	35+	399	68%	524	89%	2	0%	320	55%	587
NJ13-0010	0-15	-	-	-	-	-	-	-	-	-
	15-25	1	14%	3	43%	0	0%	1	14%	7*
	25-35	203	57%	308	86%	0	0%	144	40%	357
	35+	640	78%	750	91%	1	0%	472	58%	820
NJ13-0011	0-15	-	-	-	-	-	-	-	-	-
	15-25	1	6%	4	22%	0	0%	1	6%	18*
	25-35	210	36%	378	64%	1	0%	175	30%	587
	35+	302	62%	428	88%	0	0%	240	49%	489
NJ13-0012	0-15	0	0%	0	0%	0	0%	0	0%	2*
	15-25	28	17%	84	51%	0	0%	28	17%	165
	25-35	224	41%	392	72%	0	0%	183	34%	541
	35+	236	76%	288	92%	0	0%	173	55%	312
NJ13-0014	0-15	-	-	-	-	-	-	-	-	-
	15-25	4	21%	10	53%	0	0%	1	5%	19*
	25-35	132	40%	232	70%	0	0%	61	18%	333
	35+	399	75%	493	93%	0	0%	265	50%	533
NJ13-0015	0-15	-	-	-	-	-	-	-	-	-
	15-25	0	0%	2	50%	0	0%	0	0%	4*
	25-35	31	55%	50	89%	0	0%	17	30%	56
	35+	438	63%	611	87%	3	0%	350	50%	699
NJ13-0016	0-15	-	-	-	-	-	-	-	-	-
	15-25	-	-	-	-	-	-	-	-	-
	25-35	21	34%	39	63%	0	0%	4	6%	62
	35+	835	64%	1159	89%	1	0%	688	53%	1305
NJ13-0017	0-15	-	-	-	-	-	-	-	-	-
	15-25	1	100%	1	100%	0	0%	0	0%	1*
	25-35	6	60%	8	80%	0	0%	1	10%	10*
	35+	996	62%	1408	88%	4	0%	898	56%	1607

*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 New Jersey

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	
NJ13-0020	0-15	-	-	-	-	-	-	-	-	-
	15-25	0	0%	1	33%	0	0%	0	0%	3*
	25-35	63	56%	91	81%	0	0%	7	6%	112
	35+	768	75%	907	89%	2	0%	482	47%	1021
NJ13-0021	0-15	-	-	-	-	-	-	-	-	-
	15-25	0	0%	0	0%	0	0%	0	0%	3*
	25-35	17	31%	30	55%	0	0%	4	7%	55
	35+	652	63%	879	84%	0	0%	422	41%	1042
NJ13-0022	0-15	-	-	-	-	-	-	-	-	-
	15-25	3	50%	6	100%	0	0%	0	0%	6*
	25-35	118	75%	145	92%	0	0%	71	45%	157
	35+	364.0	74%	442.0	90%	0.0	0%	247.0	50%	490
NJ13-0023	0-15	-	-	-	-	-	-	-	-	-
	15-25	11	39%	19	68%	0	0%	3	11%	28*
	25-35	168	74%	207	91%	0	0%	97	43%	228
	35+	364	79%	428	93%	0	0%	266	58%	462
NJ13-0025	0-15	-	-	-	-	-	-	-	-	-
	15-25	120	29%	274	66%	0	0%	134	32%	418
	25-35	229	55%	335	80%	0	0%	171	41%	419
	35+	81	78%	98	94%	0	0%	60	58%	104
NJ13-0026	0-15	0	0%	0	0%	0	0%	0	0%	1*
	15-25	0	0%	3	30%	0	0%	0	0%	10*
	25-35	91	27%	195	58%	0	0%	52	15%	339
	35+	345	60%	512	89%	0	0%	274	47%	578
NJ13-0027	0-15	0	0%	5	50%	0	0%	1	10%	10*
	15-25	59	43%	94	69%	0	0%	34	25%	136
	25-35	338	67%	447	88%	0	0%	288	57%	506
	35+	197	62%	263	83%	1	0%	141	45%	316
NJ13-0028	0-15	21	17%	89	71%	0	0%	79	63%	125
	15-25	116	32%	240	67%	0	0%	133	37%	360
	25-35	479	52%	755	82%	0	0%	419	45%	926
	35+	169	73%	207	90%	0	0%	130	57%	230
NJ13-0029	0-15	1	17%	2	33%	0	0%	0	0%	6*
	15-25	76	31%	157	65%	0	0%	55	23%	242
	25-35	548	52%	876	83%	0	0%	400	38%	1060
	35+	402.0	71%	512.0	91%	1.0	0%	277.0	49%	564
NJ13-0032	0-15	-	-	-	-	-	-	-	-	-
	15-25	25	9%	80	27%	0	0%	21	7%	294
	25-35	278	27%	564	54%	3	0%	164	16%	1043
	35+	420	61%	600	87%	1	0%	299	44%	686
NJ13-0033	0-15	3	25%	6	50%	0	0%	4	33%	12*
	15-25	0	0%	0	0%	0	0%	0	0%	6*
	25-35	106	42%	184	73%	0	0%	55	22%	252
	35+	1013	63%	1435	90%	2	0%	881	55%	1596

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