

**Speed Study Evaluation of
Radar “Your Speed Is” Sign Installation**

**Order # 41000001645
N. Duke Street & N. Gregson Street
City of Durham, Durham County**

Documents Prepared By:

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Date

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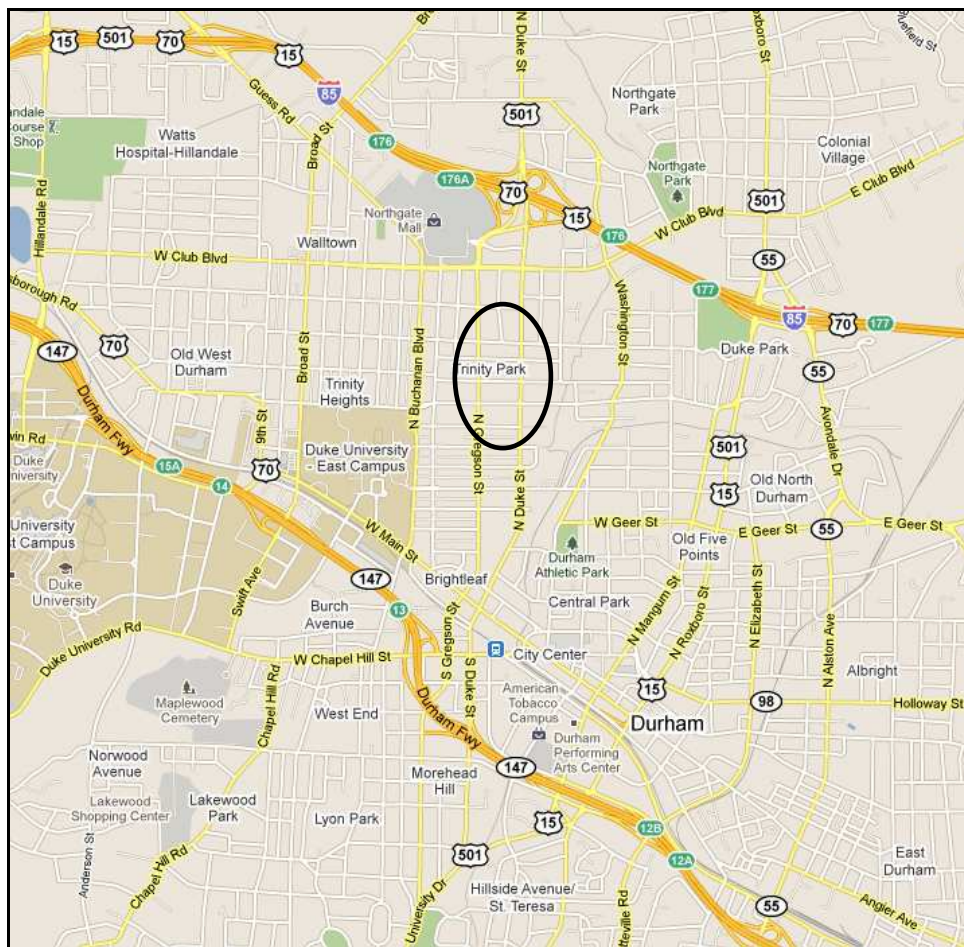
Introduction

When new traffic safety countermeasures are applied to the transportation system of North Carolina roadways, it is the responsibility of the NCDOT Safety Evaluation Group to determine the effectiveness of these countermeasures. The use of a Radar Speed Sign has not previously been utilized abundantly on a Secondary Road within our state's transportation network and for this reason; the following evaluation has been conducted.

The goal of this project is to determine if the use of "Your Speed Is" radar signs are effective in creating speed limit compliance. The measure of effectiveness for this project will be to collect speed data and review vehicle speeds, average speeds, and percentage of vehicles exceeding the speed limit within the collected data sets.

Location

The Durham Radar Speed Study Evaluation took place at two locations within the City of Durham, in Durham County. The northbound radar sign was placed on Duke Street near Demerius Street and the southbound sign was placed on Gregson Street near Knox Street in the Trinity Park area of Durham. Please see the following maps and photos of the countermeasure.





Site Characteristics and Improvements

Duke Street and Gregson Street are parallel couplet roads that contain identical roadway geometrics. They are one-directional roadways with two lanes and on-street parking along one side; the left side of roadway (beside fast lane). The posted speed limit is 35 mph on both roadways and the alignment is straight with many vertical curves. This area contains many residential houses and driveways are abundantly present along both streets. Both Duke Street and Gregson Street are the main thoroughfares through Durham connecting the city's downtown district with Interstate 85 to the north. Duke Street operates northbound and Gregson Street handles the southbound vehicle movement. The surrounding area also serves Northgate Mall, Durham School of the Arts, and Duke University East Campus.

During a speed data collection during 2008 by the City of Durham for the Trinity Park Calming Study, these two sections of roadway were determined to have the most significant issues of consistent vehicle speeding. Duke Street between Green Street and Demerius Street experienced 90.05 percent of vehicles exceeding the posted speed limit. In accordance, Gregson Street experienced 88.46 percent of vehicles exceeding the posted speed limit between Englewood Avenue and Knox Street.

To correct the speed concern at these two locations, the City of Durham chose to install "Your Speed Is" Radar Speed Signs on these sections of roadway to alert drivers of their non-compliance

with the posted 35-mph speed limit. The intended purpose was to bring enhanced visual acuity to the posted speed limit and affect driver behavior. The 2009 ADTs for these locations were: Duke Street at 9,600 and Gregson Street at 8,900.

The Duke Street radar speed sign was installed approximately 45 feet south of the Demerius Street intersection which operates under stop sign control with a 25-mph cross street speed limit. The roadway geometrics are downhill at this location with a “Data” bus stop located right behind the new countermeasure sign. See photos below.



Duke Street – Showing Roadway Geometrics



Duke Street – Sign in Operation

The Gregson Street radar speed sign was installed approximately 225 feet north of the Knox Street intersection which operates under stop sign control with a 25-mph cross street speed limit. The roadway geometrics are downhill at this location. See photos below.



Gregson Street – Showing Roadway Geometrics



Gregson Street – Sign in Operation

Data Collection

Data was collected using the Lidar Gun. Before data collection began, the accuracy of the Lidar Gun was tested using standard procedure stated in the user manual. The results indicated that the device's speed accuracy and distance measurements were exact.

Data was collected at each location for 1.5 hours at three different times of the day (morning, mid-day, and evening). Speeds were attempted to be collected in an inconspicuous manner from the on-street parking so as not to influence the driver's speed or behavior. The Safety Evaluation group collected data on Mondays and Thursdays for the best representation of commuter vehicles (every day traffic). Each particular vehicle speed chosen, was operating under free-flow condition and was not prohibited in any manner from choosing their own traveling speed.

Weather was the main factor in maintaining consistent data collection. Condition requirements were having a dry roadway with overcast or sunny skies.

The following measures of effectiveness (MOEs) were collected / analyzed from the data:

- ◆ **Vehicle Speeds** – speed chosen by the lead driver and collected using the Lidar Gun
- ◆ **Average Speed** – speeds collected per location averaged
- ◆ **Percentage of Vehicles Exceeding Speed Limit** – consistent with design data
- ◆ **Pace Speed** – 10 mph range at which majority of vehicles were traveling

There was a mechanical issue with the Gregson Street sign immediately following installation. Our work plan was readjusted based upon when both signs were operational in December 2009. The Safety Evaluation Group had the following Data Collection Periods:

Before Period – October 8th and 19th, 2009

Installation – November 2009 / Operational – December 2009

1-Month After Period – January 7th and 11th, 2010

3-Month After Period – March 18th and 25th, 2010 (Two Thursdays due to Weather)

6-Month After Period – June 24th and 28th, 2010

9-Month After Period – September 20th and 23rd, 2010

12-Month After Period (Final) – January 20th and 24th, 2011

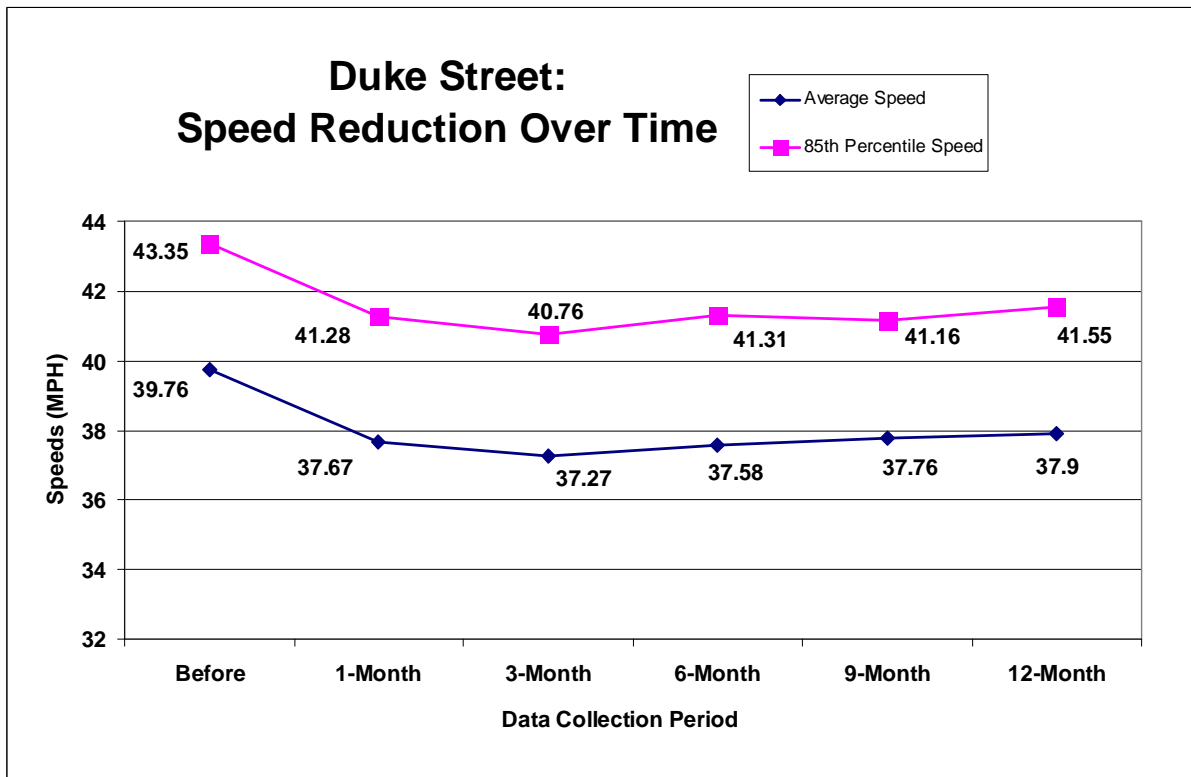
Results

Figures 1, 2, and their corresponding graphs below show the results of the speed data collected for our analysis at the two different data collection sites. The data in figure 1 is shown for Duke Street (northbound vehicles) and figure 2 represents Gregson Street (southbound vehicles) and details the four main measures of effectiveness as listed above.

Commonly accepted engineering practices conclude that safety is enhanced when the 10-mph pace speed range includes a large percentage (more than 70 percent) of all the free-flowing vehicles at a location. This is due to consistency in the traveling speed where the differential in speeds does not create additional conflict points.

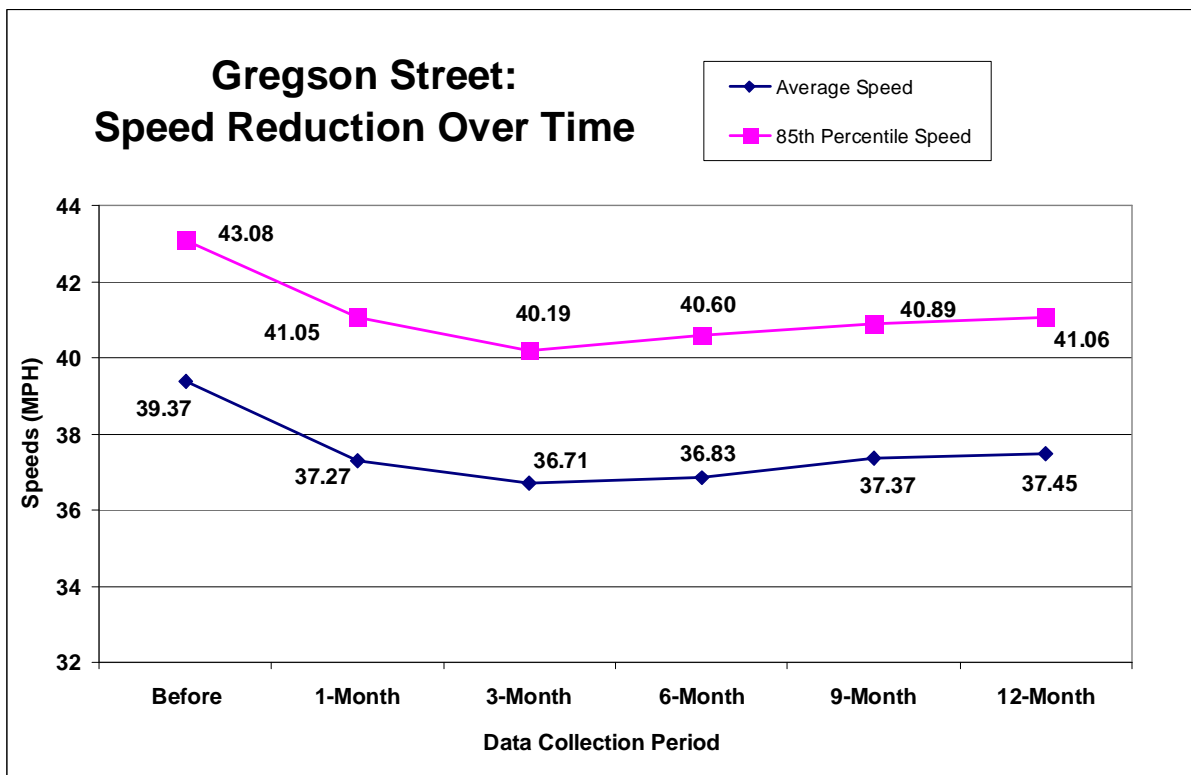
Duke Street	Before	1-Month	3-Month	6-Month	9-Month	12-Month
Total Observations	1845	2030	2097	2430	1981	2075
Average Speed	39.76	37.67	37.27	37.58	37.76	37.90
85 th Percentile	43.35	41.28	40.76	41.31	41.16	41.55
% Exceeding Speed Limit	84.0 %	69.7 %	66.8 %	69.1 %	71.1 %	70.7 %
Pace Speed (Range)	35-44 mph	33-42 mph	33-42 mph	33-42 mph	33-42 mph	33-42 mph
% Drivers within Pace	77.45 %	79.02 %	78.11 %	77.28 %	80.70 %	79.66 %

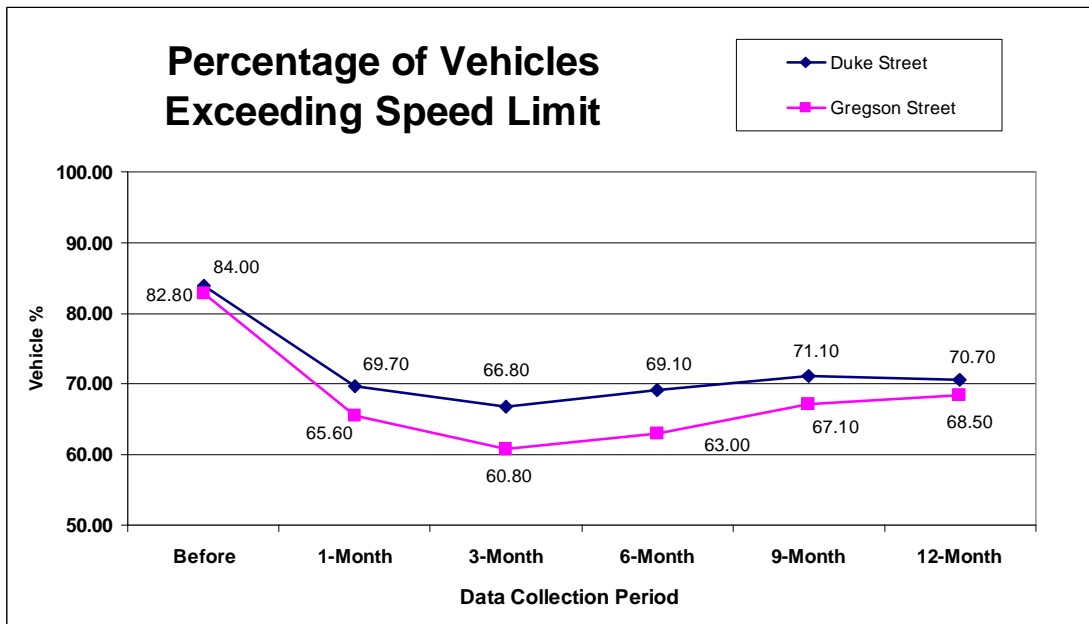
Figure 1: Duke Street (NB between Green and Demerius Streets)



Gregson Street	Before	1-Month	3-Month	6-Month	9-Month	12-Month
Total Observations	1593	1830	1725	2202	1553	2032
Average Speed	39.37	37.27	36.71	36.83	37.37	37.45
85 th Percentile	43.08	41.05	40.19	40.60	40.89	41.06
<hr/>						
% Exceeding Speed Limit	82.8 %	65.6 %	60.8 %	63.0 %	67.1 %	68.5 %
<hr/>						
Pace Speed (Range)	35-44 mph	33-42 mph	32-41 mph	32-41 mph	33-42 mph	33-42 mph
% Drivers within Pace	77.65 %	77.81 %	78.32 %	76.79 %	79.70 %	79.68 %

Figure 2: Gregson Street (SB between Englewood and Knox Road)





Final Comments

Speed compliance on our roadways is a key strategic goal of the NCDOT. From an initial glance of the evaluation data associated with the installation of these radar speed signs, speed reduction was achieved across the board. From the Before Period to the 12-Month After Period, both of these locations achieved lower average and 85th percentile speeds by approximately 2 mph.

However, the evaluation does show an initial greater impact that was maximized at the 3-month evaluation mark. Looking at the average speeds at both locations; the 6-month, 9-month, and 12-month evaluations indicated a slight increase from the previous study period. We can conclude that motorists are getting acquainted to having this countermeasure in place and their confidence level for exceeding the posted speed limit is slowly increasing again. This behavior aside, these locations are still experiencing a positive impact verses data collected prior to the radar sign installations.

The graph showing percentage of vehicles exceeding the speed limit concludes the greatest impact of this countermeasure. With the installation of the radar signs, the percentage of vehicles exceeding the posted 35-mph speed limit has dropped by 14 percent on both roadways. At the 3-month mark, the greatest impact was observed with a 22 percent reduction on Gregson Street.

The Safety Evaluation Group also conducted an analysis to conclude if the reduction from the before period to the 12-month after period was statistically significant. The Two-Sample Test Method and Tukey's Honestly Significant Differences (HSD) Test were both conducted. It was discovered that both tests exceed the required critical value for the 99% confidence interval when examining the average speed reduction and were determined to be of statistical significant benefit.

This type of countermeasure appears to be effective in reducing speeds by giving motorists an additional cue to real-time driving behavior and performance. It allows drivers to correct their behavior instantly and make smarter decisions on our roadway network. These smarter decisions have the potential to lead to increased safety and mobility on our roads.

APPENDIX

Speed Collection Data Sheets

Your Speed Sign Evaluation (Historical Data)

Gregson Street and Duke Street

Collection Point Description	Date	% Exceeding	85% (mph)	Mean (mph)
Data Collected by the City of Durham				
Gregson St. - SB between Gloria and Lamond	2/19/08	46.08	39.6	34.4
Gregson St. - SB between Markham and Urban	2/18/08	59.29	42.1	36.2
Gregson St. - SB between Englewood and Knox	2/13/08	88.46	44.3	40
Gregson St. - SB between Urban and Trinity	9/19/06	54.09	40.7	35.3
Duke St. - NB between Dacian and Urban				
Duke St. - NB between Green and Demerius	2/19/08	90.05	45.2	40.7
Duke St. - NB between Urban and Trinity	9/19/06	32.22	37.6	32.9
Trinity Park Traffic Calming Study				
Gregson St. - SB between Club and Englewood	9/19/01	79.3	44	39.4
Study follow-up results	4/21/05	80.71	43.29	38.6
Gregson St. - SB between Knox and Markham	9/19/01	68.4	43.2	38.1
Study follow-up results	4/21/05	76.59	52.39	41.23
Gregson St. - SB between Monmouth and Markham	9/19/01	2.4	32.7	28
Study follow-up results	4/20/05	34.76	38.94	33.62
Gregson St. - SB between Trinity and Durham High	9/19/01	41.8	40.5	36.7
Study follow-up results	4/19/05	47.54	39.86	34.59
Duke St. - NB between Englewood and Club				
Duke St. - NB between Markham and Knox	9/19/01	87.1	46.2	42.2
Study follow-up results	4/13/05	71.63	43.63	38.15
Duke St. - NB between Trinity and Markham	10/28/01	62.9	42.6	37.3
Study follow-up results	4/13/05	55.75	39.79	36.12
Duke St. - NB between Duke and Durham High	9/19/01	43.9	39.3	34.7
Study follow-up results	4/13/05	36.3	39.07	34.03

*Nearest collection point to signs

Before Period: "Your Speed Is" Radar Sign - Duke Street & Gregson Street

County	Durham	Durham	Durham	Durham	Durham	Durham
Direction	Northbound	Northbound	Northbound	Northbound	Northbound	Northbound
Date	10/8/2009	10/8/2009	10/8/2009	10/19/2009	10/19/2009	10/19/2009
Data Loc.	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street
Conditions	Clear / Sunny	Clear / Sunny	Dry / Dark	Clear / Sunny	Clear / Sunny	Dry / Dark
Time	1.5 Hr (8:30a)	1.5 Hr (1:30p)	1.5 Hr (6:30p)	1.5 Hr (10am)	1.5 Hr (2:30pm)	1.5 Hr (7:30p)
Data Set	1	3	5	8	10	12
Total Obs	275	324	311	282	332	321
Average	40.57	40.11	39.09	39.63	39.59	39.60
50th Percentile	40.08	39.53	38.59	39.04	38.90	38.78
85th Percentile	44.15	43.84	42.42	42.87	42.97	43.86
Stnd Dev	4.15	4.28	4.28	4.20	4.71	4.68
Variance	17.25	18.32	18.32	17.66	22.16	21.91

Duke Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	84.0

Totals Averaged Duke Street
1845
39.76
39.15
43.35
4.38
19.27

Duke Street PACE Speed Calc	
Low Pace	35
High Pace	44
Vehicle %	77.45

County	Durham	Durham	Durham	Durham	Durham	Durham
Direction	Southbound	Southbound	Southbound	Southbound	Southbound	Southbound
Date	10/8/2009	10/8/2009	10/8/2009	10/19/2009	10/19/2009	10/19/2009
Data Loc.	Gregson St	Gregson St	Gregson St	Gregson St	Gregson St	Gregson St
Conditions	Clear / Sunny	Clear / Sunny	Dry / Dark	Clear / Sunny	Clear / Sunny	Dry / Dark
Time	1.5 Hr (10am)	1 Hr (3pm)	1.5 Hr (8pm)	1.5 Hr (8:30am)	1.5 Hr (1pm)	1.5 Hr (6pm)
Data Set	2	4	6	7	9	11
Total Obs	298	223	242	261	323	246
Average	39.82	39.53	38.17	40.52	39.77	38.44
50th Percentile	39.12	38.98	37.41	39.82	39.20	38.05
85th Percentile	43.57	43.88	41.75	43.81	43.33	42.14
Stnd Dev	4.11	4.60	4.37	4.04	4.01	4.38
Variance	16.90	21.16	19.08	16.29	16.06	19.15

Gregson Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	82.8

Totals Averaged Gregson St
1593
39.37
38.76
43.08
4.25
18.11

Gregson Street PACE Speed Calc	
Low Pace	35.00
High Pace	44.00
Vehicle %	77.65

1 Month After Period: "Your Speed Is" Radar Sign - Duke Street & Gregson Street

County	Durham	Durham	Durham	Durham	Durham	Durham
Direction	Northbound	Northbound	Northbound	Northbound	Northbound	Northbound
Date	1/7/2010	1/7/2010	1/7/2010	1/11/2010	1/11/2010	1/11/2010
Data Loc.	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street
Conditions	Clear / Cold	Clear / Cold	Dry / Clear	Clear / Cold	Clear / Sunny	Dry / Dark
Time	1.5 Hr (8:30am)	1.5 Hr (1:00pm)	1.5 Hr (6:00pm)	1.5 Hr (9:30am)	1.5 Hr (2:30pm)	1.5 Hr (7:30p)
Data Set	1	3	5	8	10	12
Total Obs	331	306	314	364	399	316
Average	38.11	37.85	36.62	38.05	38.10	37.29
50th Percentile	37.29	37.35	35.76	37.19	37.30	36.61
85th Percentile	41.57	41.64	40.21	41.86	41.87	40.53
Stnd Dev	4.22	4.04	3.81	4.36	4.51	3.66
Variance	17.78	16.31	14.49	19.01	20.35	13.38

Duke Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	69.7

Totals Averaged Duke Street
2030
37.67
36.92
41.28
4.10
16.88

Duke Street PACE Speed Calc	
Low Pace	33
High Pace	42
Vehicle %	79.02

County	Durham	Durham	Durham	Durham	Durham	Durham
Direction	Southbound	Southbound	Southbound	Southbound	Southbound	Southbound
Date	1/7/2010	1/7/2010	1/7/2010	1/11/2010	1/11/2010	1/11/2010
Data Loc.	Gregson St	Gregson St	Gregson St	Gregson St	Gregson St	Gregson St
Conditions	Clear / Cold	Clear / Cold	Dry / Dark	Clear / Cold	Clear / Sunny	Dry / Dark
Time	1.5 Hr (10am)	1 Hr (2:30pm)	1.5 Hr (7:30pm)	1.5 Hr (8:00am)	1.5 Hr (1pm)	1.5 Hr (6:00pm)
Data Set	2	4	6	7	9	11
Total Obs	281	325	238	354	354	278
Average	38.12	37.11	36.32	37.97	37.37	36.76
50th Percentile	37.19	36.39	35.64	37.17	36.53	36.09
85th Percentile	42.09	40.71	40.33	41.88	41.53	39.77
Stnd Dev	4.18	4.09	4.34	4.16	4.24	3.83
Variance	17.45	16.69	18.86	17.27	17.97	14.69

Gregson Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	65.6

Totals Averaged Gregson St
1830
37.27
36.50
41.05
4.14
17.16

Gregson Street PACE Speed Calc	
Low Pace	33
High Pace	42
Vehicle %	77.81

3 Month After Period: "Your Speed Is" Radar Sign - Duke Street & Gregson Street

County	Durham	Durham	Durham	Durham	Durham	Durham
Direction	Northbound	Northbound	Northbound	Northbound	Northbound	Northbound
Date	3/18/2010	3/18/2010	3/18/2010	3/25/2010	3/25/2010	3/25/2010
Data Loc.	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street
Conditions	Cloudy / Dry	Cloudy / Dry	Cloudy / Dry	Sunny / Dry	Cloudy / Dry	Dry / Dark
Time	1.5 Hr (8:30am)	1.5 Hr (1:00pm)	1.5 Hr (6:00pm)	1.5 Hr (10am)	1.5 Hr (2:30pm)	1.5 Hr (7:30p)
Data Set	1	3	5	8	10	12
Total Obs	351	358	330	338	383	337
Average	37.50	37.94	36.72	37.29	37.76	36.39
50th Percentile	36.87	37.48	36.06	36.66	37.16	35.92
85th Percentile	41.21	41.85	39.97	40.85	41.36	39.35
Stnd Dev	3.95	4.45	3.76	4.27	4.22	3.90
Variance	15.63	19.82	14.15	18.24	17.84	15.21

Duke Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	66.8

Totals Averaged Duke Street
2097
37.27
36.69
40.76
4.09
16.82

Duke Street PACE Speed Calc	
Low Pace	33
High Pace	42
Vehicle %	78.11

County	Durham	Durham	Durham	Durham	Durham
Direction	Southbound	Southbound	Southbound	Southbound	Southbound
Date	3/18/2010	3/18/2010	3/25/2010	3/25/2010	3/25/2010
Data Loc.	Gregson St	Gregson St	Gregson St	Gregson St	Gregson St
Conditions	Sunny / Dry	Cloudy / Dry	Cloudy / Dry	Cloudy / Dry	Cloudy / Dry
Time	1 Hr (2:30pm)	1.5 Hr (7:30pm)	1.5 Hr (8:30am)	1.5 Hr (1pm)	1.5 Hr (6:00pm)
Data Set	4	6	7	9	11
Total Obs	348	333	339	397	308
Average	37.08	35.89	37.28	36.79	36.49
50th Percentile	36.37	35.21	36.52	36.07	35.88
85th Percentile	40.31	39.53	40.71	40.14	40.28
Stnd Dev	4.05	4.03	4.03	3.80	4.06
Variance	16.44	16.27	16.20	14.46	16.47

Gregson Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	60.8

Totals Averaged Gregson St
1725
36.71
36.01
40.19
3.99
15.97

Gregson Street PACE Speed Calc	
Low Pace	32
High Pace	41
Vehicle %	78.32

6 Month After Period: "Your Speed Is" Radar Sign - Duke Street & Gregson Street

County	Durham	Durham	Durham	Durham	Durham	Durham
Direction	Northbound	Northbound	Northbound	Northbound	Northbound	Northbound
Date	6/24/2010	6/24/2010	6/24/2010	6/28/2010	6/28/2010	6/28/2010
Data Loc.	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street
Conditions	Sunny / Hot	Sunny / Hot	Sunny / Hot	Sunny / Hot	Sunny / Hot	Dry / Hot
Time	1.5 Hr (8:30am)	1.5 Hr (1:00pm)	1.5 Hr (6:00pm)	1.5 Hr (10am)	1.5 Hr (2:30pm)	1.5 Hr (7:30p)
Data Set	1	3	5	8	10	12
Total Obs	428	401	380	406	470	345
Average	37.51	37.26	37.30	37.84	37.99	37.61
50th Percentile	37.17	36.84	36.53	37.39	37.38	37.08
85th Percentile	41.58	40.54	41.13	41.74	41.71	41.15
Stnd Dev	4.60	3.82	4.12	4.22	4.25	4.09
Variance	21.18	14.59	17.01	17.83	18.09	16.73

Duke Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	69.14

Totals Averaged Duke Street
2430
37.58
37.06
41.31
4.19
17.57

Duke Street PACE Speed Calc	
Low Pace	33
High Pace	42
Vehicle %	77.28

County	Durham	Durham	Durham	Durham	Durham	Durham
Direction	Southbound	Southbound	Southbound	Southbound	Southbound	Southbound
Date	6/24/2010	6/24/2010	6/24/2010	6/28/2010	6/28/2010	6/28/2010
Data Loc.	Gregson St	Gregson St	Gregson St	Gregson St	Gregson St	Gregson St
Conditions	Sunny / Hot	Sunny / Hot	Hot / Dry	Sunny / Hot	Sunny / Hot	Sunny / Hot
Time	1.5 Hr (10am)	1.5 Hr (2:30pm)	1.5 Hr (7:30pm)	1.5 Hr (8:30am)	1.5 Hr (1pm)	1.5 Hr (6:00pm)
Data Set	2	4	6	7	9	11
Total Obs	400	367	297	406	420	312
Average	36.44	37.04	36.64	37.57	36.70	36.61
50th Percentile	36.00	36.71	36.22	37.00	36.08	36.09
85th Percentile	40.29	40.62	40.65	41.01	40.73	40.30
Stnd Dev	4.42	4.27	4.28	4.07	4.25	3.81
Variance	19.52	18.23	18.36	16.54	18.07	14.49

Gregson Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	62.99

Totals Averaged Gregson St
2202
36.83
36.35
40.60
4.18
17.54

Gregson Street PACE Speed Calc	
Low Pace	32
High Pace	41
Vehicle %	76.79

9 Month After Period: "Your Speed Is" Radar Sign - Duke Street & Gregson Street

County	Durham	Durham	Durham	Durham	Durham	Durham
Direction	Northbound	Northbound	Northbound	Northbound	Northbound	Northbound
Date	9/20/2010	9/20/2010	9/20/2010	9/23/2010	9/23/2010	9/23/2010
Data Loc.	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street
Conditions	Sunny / Clear	Sunny / Clear	Clear / Dry	Sunny / Clear	Sunny / Clear	Dry / Clear
Time	1.5 Hr (8:00am)	1.5 Hr (1:00pm)	1.5 Hr (6:00pm)	1.5 Hr (9:30am)	1.5 Hr (2:30pm)	1.5 Hr (7:30p)
Data Set	1	3	5	8	10	12
Total Obs	347	332	337	299	363	303
Average	37.80	38.61	37.34	38.13	38.08	36.62
50th Percentile	37.02	38.04	36.65	37.42	37.36	35.95
85th Percentile	41.68	42.31	40.28	41.53	41.09	40.04
Stnd Dev	4.06	4.07	3.77	4.00	3.67	3.81
Variance	16.51	16.54	14.24	16.01	13.47	14.50

Duke Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	71.08

Totals Averaged Duke Street
1981
37.76
37.07
41.16
3.90
15.21

Duke Street PACE Speed Calc	
Low Pace	33
High Pace	42
Vehicle %	80.72

County	Durham	Durham	Durham	Durham	Durham
Direction	Southbound	Southbound	Southbound	Southbound	Southbound
Date	9/20/2010	9/20/2010	9/23/2010	9/23/2010	9/23/2010
Data Loc.	Gregson St	Gregson St	Gregson St	Gregson St	Gregson St
Conditions	Sunny / Clear	Clear / Dry	Sunny / Clear	Sunny / Clear	Clear / Dry
Time	1.5 Hr (2:30pm)	1.5 Hr (7:30pm)	1.5 Hr (8:00am)	1.5 Hr (1pm)	1.5 Hr (6:00pm)
Data Set	4	6	7	9	11
Total Obs	347	237	345	348	276
Average	37.85	36.41	37.61	37.65	37.32
50th Percentile	37.11	35.63	36.70	37.00	36.50
85th Percentile	41.25	39.61	41.54	41.45	40.58
Stnd Dev	4.16	3.78	4.20	4.14	3.96
Variance	17.32	14.25	17.64	17.17	15.70

Gregson Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	67.10

Totals Averaged Gregson St
1553
37.37
36.59
40.89
4.05
16.42

Gregson Street PACE Speed Calc	
Low Pace	33
High Pace	42
Vehicle %	79.65

12-Month After Period: "Your Speed Is" Radar Sign - Duke Street & Gregson Street

County	Durham	Durham	Durham	Durham	Durham	Durham
Direction	Northbound	Northbound	Northbound	Northbound	Northbound	Northbound
Date	1/20/2011	1/20/2011	1/20/2011	1/24/2011	1/24/2011	1/24/2011
Data Loc.	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street	Duke Street
Conditions	Clear / Dry	Clear / Dry	Dark / Dry	Cloudy / Dry	Cloudy / Dry	Dark / Dry
Time	1.5 Hr (8:00am)	1.5 Hr (1:00pm)	1.5 Hr (6:00pm)	1.5 Hr (9:30am)	1.5 Hr (2:30pm)	1.5 Hr (7:30p)
Data Set	1	3	5	8	10	12
Total Obs	358	390	325	329	375	298
Average	38.63	38.29	36.62	38.21	37.94	37.70
50th Percentile	37.79	37.66	35.78	37.15	37.34	37.00
85th Percentile	42.25	41.79	40.02	42.40	41.49	41.36
Stnd Dev	4.42	3.91	3.60	4.36	4.05	4.14
Variance	19.57	15.27	12.94	19.00	16.42	17.15

Duke Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	70.7

Totals Averaged Duke Street
2075
37.90
37.12
41.55
4.08
16.73

Duke Street PACE Speed Calc	
Low Pace	33
High Pace	42
Vehicle %	79.66

County	Durham	Durham	Durham	Durham	Durham	Durham
Direction	Southbound	Southbound	Southbound	Southbound	Southbound	Southbound
Date	1/20/2011	1/20/2011	1/20/2011	1/24/2011	1/24/2011	1/24/2011
Data Loc.	Gregson Street	Gregson St	Gregson St	Gregson St	Gregson St	Gregson St
Conditions	Clear / Sunny	Cloudy / Dry	Dark / Dry	Overcast / Dry	Cloudy / Dry	Dark / Dry
Time	1.5 Hr (9:30am)	1.5 Hr (2:30pm)	1.5 Hr (7:30pm)	1.5 Hr (8:00am)	1.5 Hr (1pm)	1.5 Hr (6:00pm)
Data Set	2	4	6	7	9	11
Total Obs	359	349	221	437	365	301
Average	37.94	37.71	37.05	37.79	37.51	36.69
50th Percentile	37.13	36.85	36.38	37.15	37.06	35.88
85th Percentile	41.76	41.63	40.59	41.29	41.01	40.07
Stnd Dev	4.34	3.93	4.10	3.87	3.97	3.73
Variance	18.88	15.46	16.83	14.99	15.75	13.93

Gregson Street Vehicles Exceeding Posted Speed Limit	
Vehicle %	68.5

Totals Averaged Gregson St
2032
37.45
36.74
41.06
3.99
15.97

Gregson Street PACE Speed Calc	
Low Pace	33
High Pace	42
Vehicle %	79.68