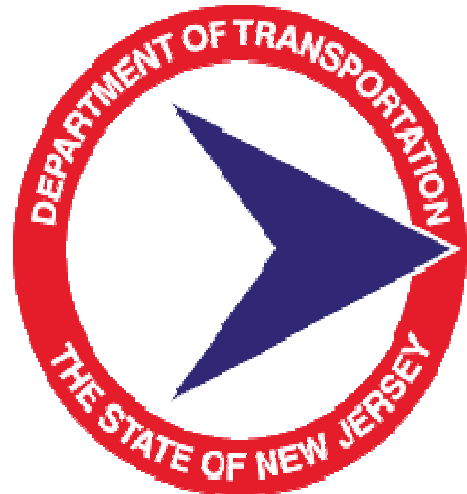


REPORT ON RED-LIGHT TRAFFIC CONTROL SIGNAL MONITORING SYSTEMS Second Annual Report

Prepared by the New Jersey
Department of Transportation

November 2012



Executive Summary

Public Law 2007, Chapter 348 (P.L. 2007, c.348), signed into law on January 13, 2008, requires the New Jersey Department of Transportation (Department) to establish a five-year pilot program to determine the effectiveness of the installation and utilization of traffic control signal monitoring systems in New Jersey. The pilot program officially began December 16, 2009, the date the first monitoring system was activated. This second annual report and its associated technical appendix describes the pilot program and analyzes the safety data for all authorized monitoring systems where violations have been issued for at least one year for the time period ending December 31, 2011.

A traffic control signal monitoring system, also known as a Red Light Running (RLR) system, is an integrated device utilizing one or more cameras and sensors that work in conjunction with a traffic control signal to produce images of vehicles that disregard a red signal or “run a red light.” These images are transmitted to law enforcement officials who review both still photos and video produced by the system to determine if a violation has in fact occurred.

As per P.L. 2007, c.348, the Department’s goal is to establish RLR systems at locations where previous engineering, enforcement and educational efforts have not been effective in decreasing traffic violations or crashes attributed to running red lights. Through this report and those that will follow for years three (3) through five (5), the Department will determine the effectiveness of these systems by analyzing the citation data for month-by-month and annual trend line patterns. The crash data will be analyzed for patterns in the number of crashes that are attributable to running red lights, as well as the severity and associated costs of those crashes.

As of May 1, 2012, there were eighty-three (83) intersections in twenty-five (25) municipalities authorized for program participation. Based on the established reporting parameters, monitoring systems at two (2) RLR locations in Newark now have two (2) years of data for study analysis. Additionally, twenty-four (24) intersections within nine (9) municipalities in six (6) counties have been recording violations for at least one (1) full year.

For the two locations with two (2) years of data, when the Pre-Camera year crash data is compared to Year 2 crash data, right-angle crashes are down 86%, same-direction crashes are down 42%, total crashes are down 57%, and estimated severity costs have been reduced by \$268,900. Crash severity cost is the overall cost attributable to running red lights, which include such things as vehicle damage, property damage, emergency response, and medical care.

Regarding the citations issued, comparing month one of operation with month 24, citations are down 85%. Generally, there is noted a consistency in month-to-month issuance of citations while there is still an overall downward trend in the number of citations issued. More importantly, all monthly Year 2 data points at both intersections are lower than the corresponding Year 1 data points. While there is no expectation that

citations will drop to zero, there is an expectation that driver behavior will change with RLR, and these locations appear to be fulfilling these expectations.

Combining all RLR locations and comparing the Pre-Camera installation 12-month time period versus the Year 1 installation 12-month time period, the data indicate that total crashes are up 0.9%, however, more severe right-angle crashes are down 15%, while same-direction (rear-end) crashes are up 20%. Crash severity cost increased by an estimated \$1,172,800. The number of citations issued statewide in Year 1 decreased by 50% when comparing the citations issued in the first month of operation versus those issued in month twelve.

Recommendation

The data from the two sites having two full years of operation shows a reduction in all types of crashes, however, the data are still too limited to draw any definitive conclusions about the pilot program at this time. The Department therefore recommends continued data collection and monitoring of RLR program intersections.

Introduction

As communities across the nation seek to address crashes and reduce both injuries and fatalities, they are increasingly looking for tools to supplement traditional enforcement resources. One of the safety tools over 550 communities, including those in New York and Pennsylvania, have employed is a Traffic Control Signal Monitoring System, better known as a Red Light Running (RLR) system. The first such system was installed in New York City in 1991. An RLR system is an integrated device using multiple cameras and vehicle sensors, which work in conjunction with a traffic control signal, to produce still pictures and video images of vehicles that disregard a red signal or “run a red light.”

P.L. 2007, c.348 (N.J.S.A. 39:4-8.12 et al.) signed into law on January 13, 2008, requires the Department to establish a five-year pilot program to determine the effectiveness of the utilization of RLR systems in New Jersey and to administer all aspects of this program. The statute outlines the application requirements and mandates municipal governing bodies to establish the installation and use of RLR systems via ordinance. The statute also requires these municipalities to conduct periodic RLR equipment inspections and lays out annual reporting requirements for municipalities and the Department.

Authorization Process

Municipalities desiring to participate in the pilot program must submit an application to the Department. Applications are available on the Department’s website at: www.state.nj.us/transportation/refdata/rlr/. At locations authorized for program participation, the affected municipalities are required to submit an ordinance establishing the monitoring system.

Upon receiving an application the Department extracts the crash, citation and volume data which is analyzed by staff within the Department’s Division of Highway and Traffic Design, producing an overall intersection safety score. The applications are then ranked. The municipality will generally receive a response within forty-five (45) days of application submission. While the program is currently at full participation, new applications continue to be submitted, scored and ranked. See *Technical Appendix for Report on Red-Light Traffic Control Signal Monitoring Systems Second Annual Report* available at the following website:

<http://www.state.nj.us/transportation/publicat/lmreports/> for more detailed information.

Program Participants

Since inception, a total of sixty-two (62) municipalities have submitted two-hundred twenty-seven (227) RLR applications to the Department. The Department has capped participation at twenty-five (25) municipalities. The following is a list of the authorized participants as of May 1, 2012, along with the dates of their authorizations:

Brick Township (Ocean) 6/1/09
Cherry Hill Township (Camden) 3/16/09
Deptford Township (Gloucester) 3/16/09
East Brunswick Township (Middlesex) 11/21/08
East Windsor Township (Mercer) 6/20/11
Edison Township (Middlesex) 1/29/09
Englewood Cliffs Borough (Bergen) 1/11/11
Glassboro Borough (Gloucester) 3/16/09
Gloucester Township (Camden) 3/16/09
Jersey City (Hudson) 8/2/10
Lawrence Township (Mercer) 1/29/09
Linden City (Union) 1/29/09
Monroe Township (Gloucester) 3/16/09
Newark City (Essex) 11/21/08
New Brunswick City (Middlesex) 1/29/09
Palisades Park Borough (Bergen) 9/13/10
Piscataway Township (Middlesex) 12/1/08
Pohatcong Township (Warren) 9/13/10
Rahway City (Union) 9/13/10
Roselle Park Borough (Union) 12/1/08
Springfield Township (Union) 5/2/11
Stratford Borough (Camden) 3/16/09
Union Township (Union) 5/2/11
Wayne Township (Passaic) 1/29/09
Woodbridge Township (Middlesex) 3/16/09

There has been one revision to the list of authorized municipalities included in the 2011 report. South Brunswick Township, which had received authorization to participate on March 16, 2009, could not garner the council majority needed to pass a Township ordinance in support of program participation. As such, South Brunswick's authorization was rescinded on June 20, 2011, and replaced by East Windsor Township. East Windsor had, at that time, the highest safety score of the municipalities with pending applications, making it the next priority location for an RLR system.

Although the number of program participants is capped, the number of intersections within those participating municipalities has expanded since June 1, 2011, from fifty-nine (59) to eighty-three (83), representing a 41% increase. Program location additions are determined by the safety score generated from the application's data. If the safety score is equal to or greater than the established safety standard, the new application from that municipality will be authorized to participate within the program as well.

Yellow Change Interval

Considering its effect on data collection and program viability, a discussion of the methodology of determining the yellow change interval at signals is appropriate. In New Jersey, yellow change intervals are determined by nationally accepted standards. The Department's guiding principle is the 2009 edition of the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), as amended and supplemented. Section 4D.26 of the MUTCD states: *The duration of the yellow change interval shall be determined using engineering practices.* The MUTCD is adopted in New Jersey through existing motor vehicle law, specifically Title 39 of the Revised Statutes. The accepted engineering practice to determine yellow change intervals is from the Institute of Transportation Engineers' 1994 report, "Determining Vehicle Signal Change and Clearance Intervals". For more detailed information, see *Technical Appendix for Report on Red-Light Traffic Control Signal Monitoring Systems Second Annual Report* available at the following website <http://www.state.nj.us/transportation/publicat/lmreports/>.

New Jersey continues to follow nationally accepted standards and does not accept practices such as reduction of yellow intervals at any signalized intersection. Municipalities are required to conduct six-month operational inspections regarding the RLR cameras and related equipment, pursuant to N.J.S.A. 39:4-8.14(e). Should any RLR-authorized municipality reduce yellow change intervals and the Department becomes aware of such actions, program authorization will be rescinded immediately.

Overall Data Analysis

As per N.J.S.A. 39:4-8.17, authorized municipalities must submit reports every twelve (12) months, detailing increases or decreases in crashes or citations. The Department is focused on two (2) types of crashes: right-angle and same-direction (rear-end). The reason for this focus is that a right-angle crash is the only crash type determined to be directly attributed to red light running. Additionally, national reports of RLR programs have generally shown a slight to moderate rise in same-direction crashes due to sudden stops by motorists knowing of the presence of RLR cameras.

Crash Severity and Cost

National studies that focus exclusively on raw numbers and associated percentage changes are missing the critical factor of crash severity. For example, at a location where right-angle crashes decreased by two (2) but same-direction crashes increased by three (3), it might be concluded that RLR was ineffective, as the total number of crashes increased. However, in general, right-angle crashes tend to be much more severe when compared to other crash types. As a result, crashes must be analyzed not only numerically but also by severity.

One way to measure crash severity is to estimate and compare the monetary cost of crashes. Costs considered include, but are not limited to, vehicle damage and repair, damage to property, emergency response, medical care, and even funeral costs. The U.S. Department of Transportation and the Federal Highway Administration outlined in a January 2010 report "Highway Safety Improvement Program Manual – The Focus is

Results” that the National Safety Council developed a scale of five (5) categories of injuries: fatality, disabling injury, evident injury, possible injury, and property damage only (no injury). Table 1 shows these categories and associated costs.

Table 1: Crash Severity Costs

Severity	
K = Fatality	\$4,008,900
A = Disabling Injury	\$216,000
B = Evident Injury	\$79,000
C = Possible Injury	\$44,900
O = Property Damage Only	\$7,400

Citation Data

There can be no true comparison of citations issued by a police enforcement presence versus an RLR system. The Department expects that the presence of RLR would reduce the number of automated citations issued, certainly year-to-year if not month-to-month, indicating that motorist behavior is changing. The specific violation associated with RLR is N.J.S.A. 39:4-81, failure to observe the instructions of a traffic control signal.

Year 2 Analysis

Out of the twenty-four (24) locations with at least one full year of RLR operation, two (2) of those intersections, Broad Street & Market Street and Broad Street & Raymond Boulevard, both in Newark City, now have been operational for two (2) full years. As discussed within the 2011 RLR Report, when compared to the Pre-Camera installation year of 2009, the Year 1 (2010) data revealed that total crashes were down 45%, right-angle crashes were down 57%, and same-direction crashes were down 50%. Additionally, crash severity costs were reduced by an estimated \$149,000, and both locations experienced a decreasing trend line regarding the number of citations issued.

At Broad Street & Market Street, when comparing Year 1 to Year 2 crash data, right-angle crashes were reduced by 50%, same-direction crashes were down 50% and total crashes decreased by 29%. Regarding estimated severity values, right-angle crash costs were down by \$44,900 and same-direction crash costs were reduced by \$97,200, resulting in a net public benefit of \$142,100. For Broad Street & Raymond Boulevard, right-angle crashes were down 100% (1 to 0), while same-direction crashes increased numerically from zero (0) to four (4). Total crashes remained constant, with five (5) occurring in each year. Regarding estimated severity costs, right-angle crash costs were reduced by \$44,900, but same-direction crash costs increased by \$67,100, resulting in a net public cost of \$22,200. Overall, right-angle crashes experienced at these two locations were down 67%, same-direction crashes went up by 17%, and total

crashes decreased by 23%, with the intersections experiencing a net Year 2 severity cost benefit of \$119,900.

The Year 1/Year 2 (2011) RLR operational crash comparison is detailed within Table 2; the severity cost comparison is detailed within Table 3.

Table 2: Year 1 and Year 2 Count of Crash Types per Intersection

Year 1 Camera Installation

Intersection	Municipality	County	Right Angle Crashes	Same Direction Crashes	Total (incl. non-RLR)
Broad St. and Market St.	Newark City	Essex	2	6	21
Broad St. and Raymond Blvd.	Newark City	Essex	1	0	5

Year 2 Camera Installation

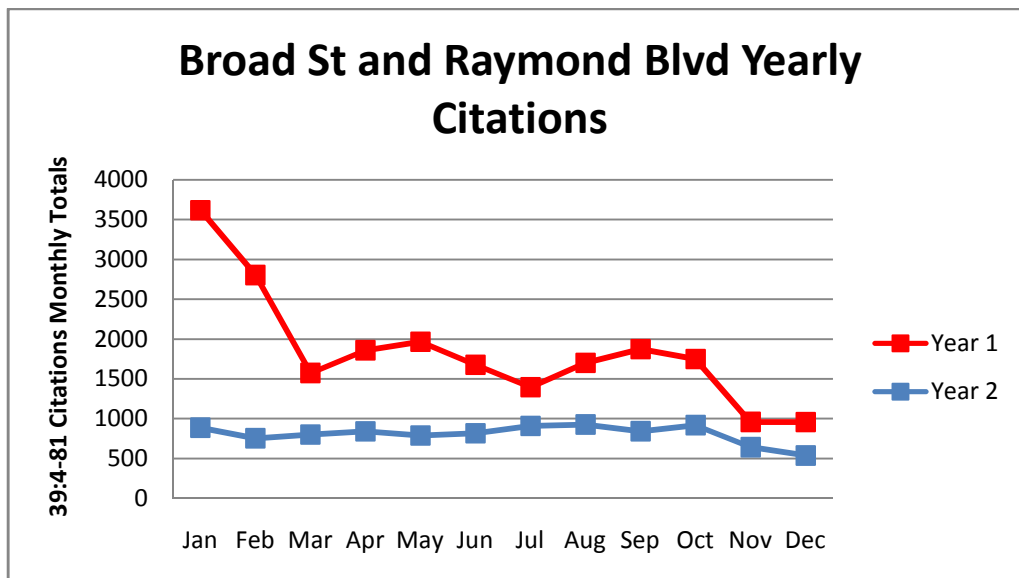
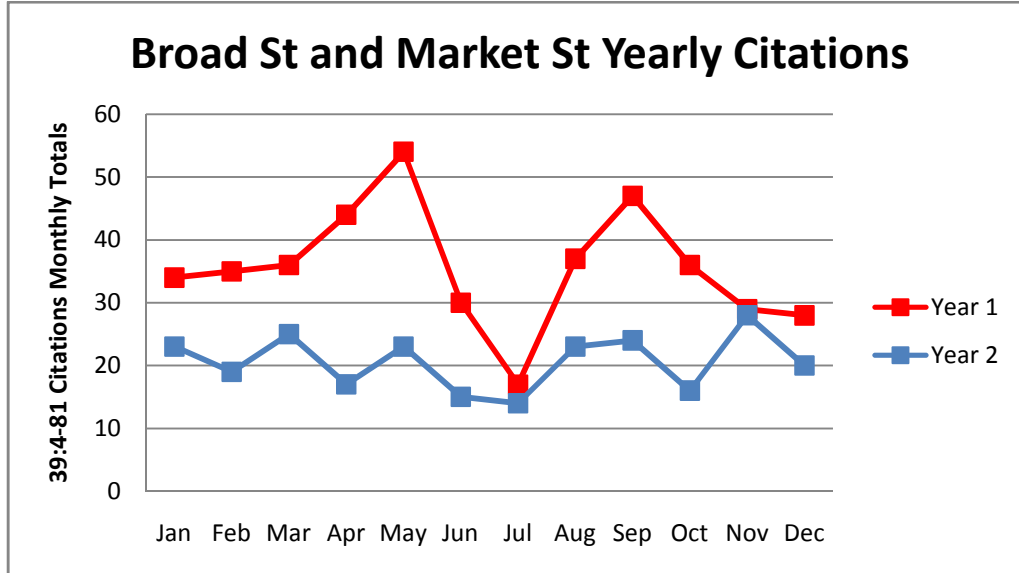
Intersection	Municipality	County	Right Angle Crashes	Same Direction Crashes	Total (incl. non-RLR)
Broad St. and Market St.	Newark City	Essex	1	3	15
Broad St. and Raymond Blvd.	Newark City	Essex	0	4	5

Table 3: Year-to-Year Cost/Benefit Analysis Summary

Intersection	Municipality	County	Year 1 to Year 2		Net Benefit [Loss]
			Right Angle	Same Direction	
Broad St. and Market St.	Newark City	Essex	\$44,900	\$97,200	\$142,100
Broad St. and Raymond Blvd.	Newark City	Essex	\$44,900	(\$67,100)	(\$22,200)

Comparing the number of automated citations issued in January 2011 with those issued in December 2011, Broad Street & Market Street saw a decrease of 13%, and Broad Street & Raymond Boulevard saw a decrease of 39%. For both intersections combined, a total of 910 citations were issued in January, compared to 558 issued in December, a total decrease of 39%. Citation comparisons are detailed in Chart 1.

Chart 1: Year 1 and Year 2 Count of Citations per Intersection



When comparing the Pre-Camera year crash data to Year 2, at Broad & Market, right-angle crashes remained unchanged (1 to 1), same-direction crashes were reduced by 50% (6 to 3), total crash experience was reduced by 46% (28 to 15), and estimated total crash costs were reduced by \$97,200. For Broad & Raymond, right-angle crashes were reduced by 100% (6 to 0), same-direction crashes were reduced by 33% (6 to 4), total crashes were reduced by 74% (19 to 5) and crash costs were reduced by \$171,700. Overall, right-angle crashes are down 86%, same-direction crashes are down 42%, total crashes are down 57%, and estimated severity costs have been reduced by \$268,900.

As for citations issued, at Broad & Market, comparing month 1 of operation with month 24, citations are down 41%. For Broad & Raymond, citations are down 85%. Combined, a total of 3,652 citations were issued in January 2010, compared to 558 issued in December 2011, a total decrease of 85%.

Two interesting notes can be found in Chart 1. First, there is a general consistency of month-to-month issuance of citations while still maintaining an overall downward trend line. Both locations indicate a leveling pattern, which suggests that drivers are modifying their behavior due to the presence of RLR cameras. Second, and more importantly, all monthly Year 2 data points at both intersections are lower than the corresponding Year 1 data points. While there is no expectation that citations will drop to zero, there is an expectation that driver behavior will change with RLR, and these locations appear to be fulfilling these expectations.

These values and trends are encouraging, however, as was concluded within the 2011 Report, two points of data within a program of statewide focus are much too limited to allow any meaningful conclusions to be drawn. While a downward trend has been observed, it is anticipated that the 2013 Report will be able to draw more concrete programmatic conclusions at these two intersections when three (3) years of data is analyzed.

Statewide – Year 1 Analysis

For calendar year 2011, twenty-four (24) locations statewide have had RLR systems in operation where citations have been issued for at least one full year. Using the data submitted within the various municipal reports, the Pre-Camera year was compared to Year 1. In other words, for all twenty-four (24) locations, the first twelve (12) months of operation under the issuance of RLR citations are being examined against the previous twelve (12) months of operation prior to the activation of RLR. These twelve (12)-month periods vary for each location, depending upon the month and year that RLR was activated. Table 4 provides a summary of that analysis. See *Technical Appendix for Report on Red-Light Traffic Control Signal Monitoring Systems Second Annual Report* at the following website <http://www.state.nj.us/transportation/publicat/lmreports/> for more detailed information on crash data, severity costs, and citations issued at these locations.

Table 4: Pre- and Post-Year Count of Crash Types per Intersection

Statewide - RLR Intersections

Crashes	Right Angle	Same Direction	Other	Total
Pre-Camera	60	286	231	577
Year 1	51	343	188	582

Statewide - Reference Intersections

Crashes	Right Angle	Same Direction	Other	Total
Pre-Camera	23	79	47	149
Year 1	23	81	47	151

Comparing the crash data at the twenty-four (24) RLR locations, total crashes increased by 0.9%. For the focus RLR crash types, right-angle crashes decreased by 15%, while same-direction crashes increased by 20%.

As per P.L. 2007, c.348, each municipality must designate a control location or “reference intersection”. The purpose of this requirement is to provide as much of a direct crash comparison between intersections with and without RLR cameras as possible. With nine (9) municipalities encompassing the twenty-four (24) RLR intersections analyzed within this Report, there are nine (9) reference intersections. At these locations, total crashes increased by 1.3%. For the focus crash types, right-angle crashes remained unchanged and same-direction crashes increased by 2.5%.

The Department compared crash severity data for the Pre-Camera year conditions to the Year 1 conditions for all twenty-four (24) RLR locations, as well as for the nine (9) municipal reference intersections. Table 5 provides a summary of the statewide RLR crashes by severity type, while Table 6 provides a summary of the statewide cost/benefit analysis.

Table 5: RLR Crashes by Severity Type

Statewide - RLR Locations

Right Angle Crashes

Severity	K	A	B	C	O	Total
Pre-Camera	0	0	1	20	39	60
Year 1	0	0	5	26	20	51

Same Direction Crashes

Severity	K	A	B	C	O	Total
Pre-Camera	0	1	1	72	212	286
Year 1	0	0	4	80	259	343

Statewide - Reference Intersections

Right Angle Crashes

Severity	K	A	B	C	O	Total
Pre-Camera	0	0	3	3	17	23
Year 1	0	0	1	4	18	23

Same Direction Crashes

Severity	K	A	B	C	O	Total
Pre-Camera	0	0	0	11	68	79
Year 1	0	0	2	18	61	81

Table 6: Year-to-Year Cost/Benefit Analysis Summary

Statewide - Benefit/(Loss)

Benefit/(Loss)	Pre-Camera to Year 1		
	Right Angle	Same Direction	<u>Total</u>
RLR Locations	(\$444,800)	(\$728,000)	(\$1,172,800)
Reference Intersections	\$105,700	(\$420,500)	(\$314,800)

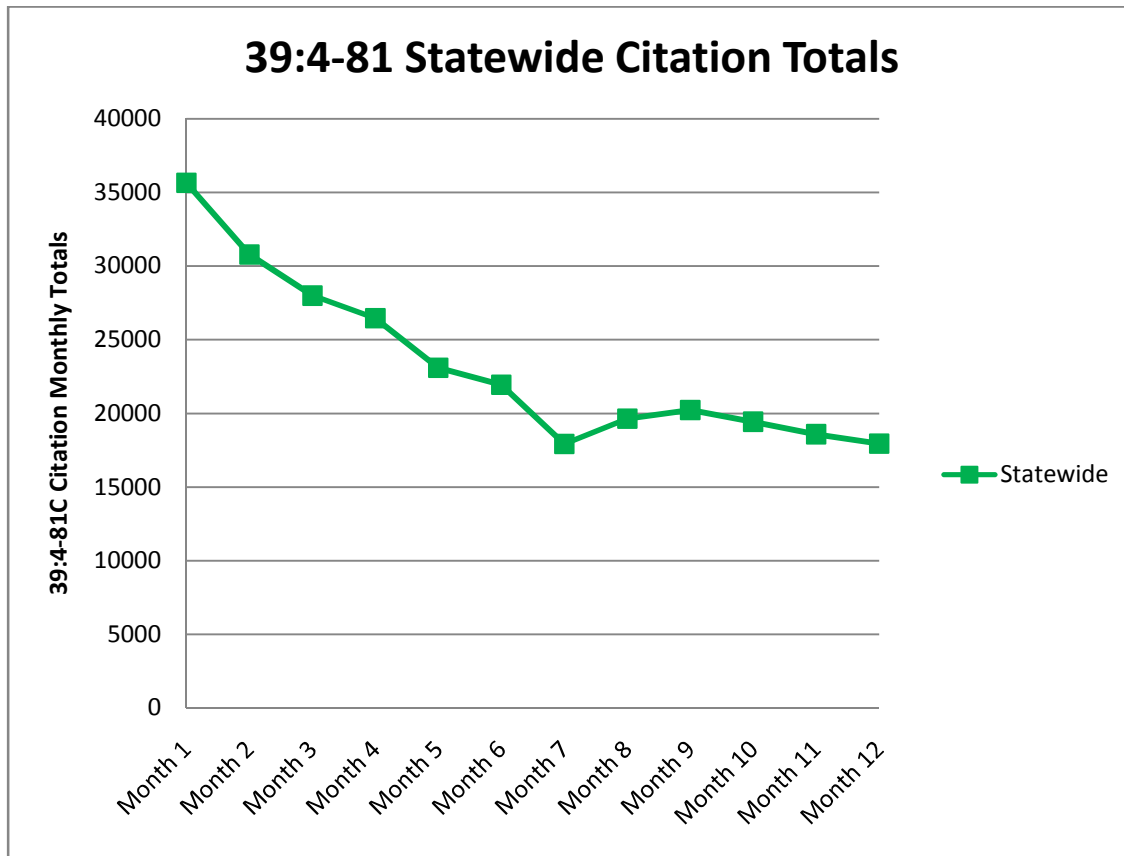
Comparing Pre-Camera year and Year 1, right-angle crash costs at the RLR locations increased by \$444,800. As detailed in Table 5, this was due to a greater number of recorded injury crashes and differences in injury category, even though right-angle crashes decreased numerically by nine (9). For the same time period at the designated reference intersections; right-angle crash costs decreased by \$105,700, even though the same number of crashes were recorded each year. Regarding same-direction crashes, crash costs at the RLR locations increased by \$728,000 while seeing the number of crashes increase by fifty-seven (57). At the reference intersections the crash costs increased by \$420,500 with the number of crashes increasing by two (2).

Combining the data for the twenty-four (24) RLR locations, the focus crash costs had a total Pre-Camera year to Year 1 public cost of \$1,172,800; for the nine (9) reference intersections, the total public cost was \$314,800.

The Statewide – Year 1 crash analysis reveals that the RLR right-angle crash numbers are lower than their reference location counterparts. However, the data appear to be conflicting, with positive decreases in the number of right-angle crashes combined with unexpected increases in the severity of those crashes, as well as a noticeable difference in RLR/reference location same-direction crashes. As such, it is important to remember that safety trends are never established over a single year, and as such additional sustained analysis is needed before concrete conclusions can be drawn.

Regarding citations, the following chart (Chart 2) details the by-month post-RLR citation data for all twenty-four (24) locations.

Chart 2: Year 1 Statewide Citation Totals



Combining all twenty-four (24) locations statewide, the overall decrease in citations issued in the first month of RLR operation as compared with the amount issued in the twelfth month was 50%, with 35,644 violations issued in month one versus 17,934 citations in month twelve.

The overall goal regarding RLR citations is decreasing trend lines of citation issuance. While there were some regional and individual location exceptions, and most intersections experienced a monthly fluctuation, Chart 2 reveals a nearly constant decrease in RLR citations issued statewide.

Frequently Asked Questions (FAQs)

Throughout this Annual Report and its Technical Appendix, the narrative is designed to answer all programmatic and data-related questions. However, the Department realizes that there are many additional questions generated by this Pilot Program and by RLR in general. A list of frequently asked questions and their explanations is available at the following website <http://www.state.nj.us/transportation/refdata/rlr/>.

Conclusions and Next Steps

The Department's focus remains solely on the potential safety benefits provided through RLR. Following that focus, the data shows decreases in right-angle crashes; decreases in the number of citations issued; and a continuation of those trends for the locations at which RLR has operated for two years—however, it is not prudent at this time to draw any final conclusions. Of the fifty-nine (59) locations that had been authorized as of June 1, 2011, only 41% managed to initiate RLR operation to the point of achieving one full year of data by the end of 2011. Also, of the authorized municipalities, only nine (9) municipalities (representing 36% of the overall program) are included within this Second Annual Report.

As such, further sustained analysis is needed and the Department recommends that the Traffic Control Signal Monitoring Systems Pilot Program continue.

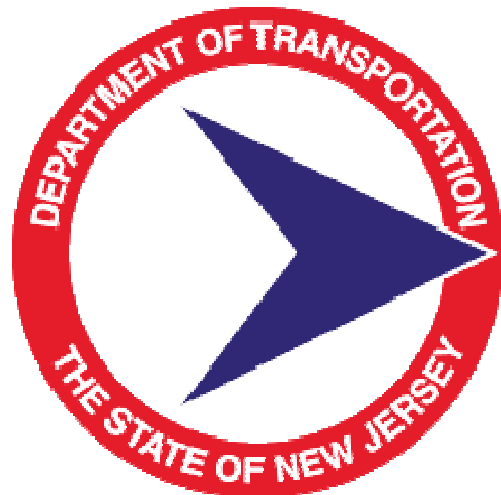
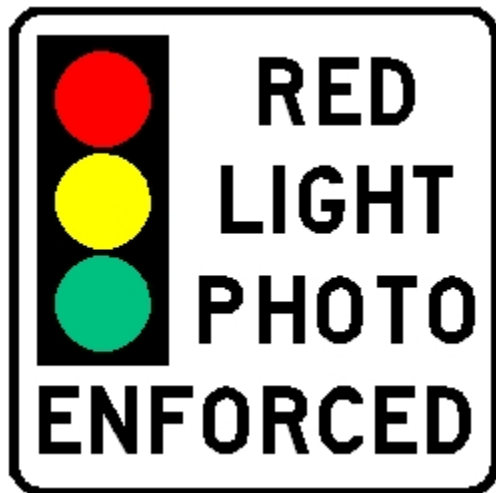
Acknowledgments

The Department acknowledges its staff within the Bureau of Traffic Engineering and the Bureau of Transportation Data and Safety, along with support from the staff at the Transportation Safety Resource Center at Rutgers University's Center for Advanced Infrastructure and Technology, for their roles in administering the pilot program and for researching and compiling this Annual Report.

TECHNICAL APPENDIX FOR REPORT ON RED-LIGHT TRAFFIC CONTROL SIGNAL MONITORING SYSTEMS Second Annual Report

Prepared by the New Jersey
Department of Transportation

November 2012



AUTHORIZATION PROCESS

As per Public Law 2007, Chapter 348 (P.L. 2007, c.348), *the Commissioner of Transportation shall establish a five-year pilot program to determine the effectiveness of the installation and utilization of traffic control monitoring systems in this State.* While P.L. 2007, c.348 outlines the application process and the data requirements, it does not speak to any process of application evaluation or methodology for the selection of program participants.

The accepted national discussion regarding red-light running (RLR) is from the Institute of Transportation Engineers' (ITE) report "Establishing a Uniform Definition of Red-Light Running Crashes", published in the March 2006 edition of the ITE Journal. The purpose of that report was to unify thoughts on how RLR crashes should be defined, thereby solidifying estimates of national data. As a result of this research, it was determined that, on average, 219,000 annual RLR crashes, about half of which resulted in persons injured, caused an estimated 188,000 injuries and 940 deaths.

With this report as its basis, the Department considers not only RLR crashes but also intersection enforcement efforts undertaken by municipal police departments, creating both crash and citation components to the safety score gleaned from the application data. However, the Department understood that raw crash and citation statistics would heavily favor the larger urban municipalities with higher crash numbers and larger police departments that potentially enabled stronger localized enforcement efforts.

From this realization, the Department added a traffic volume component, encompassing the morning, lunchtime and evening peak periods. This volume calculation allows the Department to equalize the crash and citation data into the common denominator of million vehicle miles travelled, thereby creating the opportunity for smaller communities to qualify for participation. As an example, if town A reports ten (10) RLR crashes at its specified signalized intersection, and town B reports nine (9), using raw numbers, one would conclude that town A has the more-critical RLR issue. However, if town A has a volume of 50,000 vehicles, and town B only 10,000, with the RLR crashes occurring under lower volume, it stands to reason that town B is more RLR critical. The volume data allows the Department to have an apples-to-apples application comparison and selection process.

Also as per P.L. 2007, c.348, *the commissioner may approve as many municipalities making application as he deems appropriate;* as such, the Department has capped participation at 25 authorized municipalities. Limiting participation allows for an appropriate sampling of safety data across a fairly broad spectrum while remaining manageable in terms of analysis and recommendations by a traffic engineering staff tasked with many additional duties.

DETERMINING YELLOW CHANGE INTERVALS

In New Jersey, yellow change intervals are determined by nationally accepted standards. The Department's guiding principle in determining the yellow change interval at traffic signals is the 2009 edition of the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), as amended and supplemented. Section 4D.26 of the MUTCD states: *The duration of the yellow change interval shall be determined using engineering practices.* The MUTCD is adopted in New Jersey through existing motor vehicle law, specifically Title 39 of the Revised Statutes.

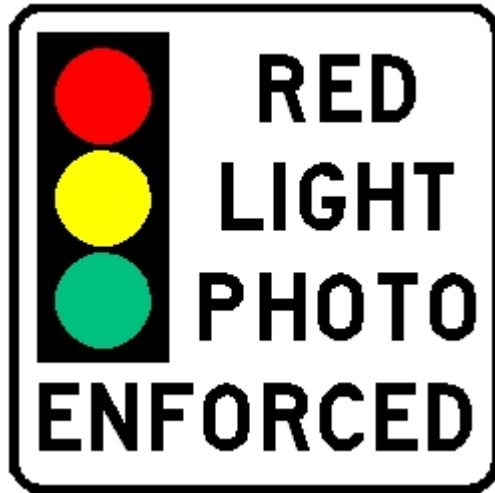
The accepted engineering practice to determine yellow change intervals is from the Institute of Transportation Engineers (ITE) 1994 report titled "Determining Vehicle Signal Change and Clearance Intervals". The formula is: $y = t + (v / 2a + 2Gg)$ where **y** is the length of the yellow interval, **t** is driver perception-reaction time (recommended as 1 second), **v** is the speed limit (feet per second), **a** is the deceleration rate (10 feet per second squared), **g** is gravitational acceleration (32 feet per second squared), and **G** is the approach grade, usually 0%. Using this formula, a speed limit of 45 MPH will result in 4.3 seconds of required yellow change interval time.

The Department utilizes a generally conservative form of the ITE formula: $y = v$ (miles per hour) **divided by 10**. This formula demands a yellow change interval of 4.5 seconds for 45 MPH, but since tenths of seconds are not recognized by the Department, the time is increased, meaning 45 MPH results in 5 seconds of yellow change interval time.

Section 4D.26 of the MUTCD states further: *The duration of a yellow change interval may be different in different signal timing plans for the same controller unit and a yellow change interval should have a minimum duration of 3 seconds and a maximum duration of 6 seconds; the longer intervals should be reserved for use on approaches with higher speeds.* As such, it should be noted that the yellow change interval for a protected left turn movement (a left turn that moves on an arrow indication), is usually lower than the yellow time for the through movement on the same approach. This is because left turns are never made safely at roadway speeds, and in most cases, the maneuvers are completed at speeds less than 25 MPH. Therefore, following the Department's engineering practice and the provisions of the MUTCD, yellow change intervals are usually set at the suggested minimum duration of 3 seconds.

Finally, Section 4D.26 of the MUTCD states that *the exclusive function of the yellow change interval shall be to warn traffic of an impending change in the right-of-way assignment.* Neither ITE nor the MUTCD has any expectation of the yellow time being long enough for the vehicle to completely clear the intersection prior to green for the conflicting movement. That clearance time is determined by the ITE formula $TC = t + v / 2a + (w + L) / v$ where **TC** is the total clearance (yellow change plus all-red clearance) time, **w** is total intersection crossing width, **L** is vehicle length (assumed to be 20 feet), and the other variables are as per the aforementioned yellow interval formula. Yellow change time is simply subtracted from the total clearance time.

**YEAR 1 - REGIONAL
CRASH DATA
SEVERITY DATA
COST/BENEFIT ANALYSIS
CITATION GRAPH**
(for locations with one year of operation)



Regional – RLR Intersections Crash Data

Region	Year	Right Angle	Same Direction	Other	Total
North	Pre-Camera	31	167	163	361
	Year 1	21	188	116	325
Central	Pre-Camera	8	47	16	71
	Year 1	12	51	18	81
South	Pre-Camera	21	72	52	145
	Year 1	18	104	54	176
Statewide	Pre-Camera	60	286	231	577
	Year 1	51	343	188	582

Regional – Reference Intersections Crash Data

Region	Year	Right Angle	Same Direction	Other	Total
North	Pre-Camera	0	25	16	41
	Year 1	5	24	14	43
Central	Pre-Camera	13	18	10	41
	Year 1	8	24	13	45
South	Pre-Camera	10	36	21	67
	Year 1	10	33	20	63
Statewide	Pre-Camera	23	79	47	149
	Year 1	23	81	47	151

Regional – RLR Intersections Severity Data

Region	Year	Crash	K	A	B	C	O	Total
North	Pre-Camera	Right Angle	0	0	0	8	23	31
		Same Direction	0	0	0	37	130	167
	Year 1	Right Angle	0	0	2	13	6	21
		Same Direction	0	0	3	33	152	188
Central	Pre-Camera	Right Angle	0	0	0	1	7	8
		Same Direction	0	0	1	5	41	47
	Year 1	Right Angle	0	0	2	5	5	12
		Same Direction	0	0	0	14	37	51
South	Pre-Camera	Right Angle	0	0	1	11	9	21
		Same Direction	0	1	0	30	41	72
	Year 1	Right Angle	0	0	1	8	9	18
		Same Direction	0	0	1	33	70	104
Statewide	Pre-Camera	Right Angle	0	0	1	20	39	60
		Same Direction	0	1	1	72	212	286
	Year 1	Right Angle	0	0	5	26	20	51
		Same Direction	0	0	4	80	259	343

Regional – Reference Intersections Severity Data

Region	Year	Crash	K	A	B	C	O	Total
North	Pre-Camera	Right Angle	0	0	0	0	0	0
		Same Direction	0	0	0	6	19	25
	Year 1	Right Angle	0	0	0	2	3	5
		Same Direction	0	0	2	8	14	24
Central	Pre-Camera	Right Angle	0	0	3	1	9	13
		Same Direction	0	0	0	0	18	18
	Year 1	Right Angle	0	0	1	1	6	8
		Same Direction	0	0	0	2	22	24
South	Pre-Camera	Right Angle	0	0	0	2	8	10
		Same Direction	0	0	0	5	31	36
	Year 1	Right Angle	0	0	0	1	9	10
		Same Direction	0	0	0	8	25	33
Statewide	Pre-Camera	Right Angle	0	0	3	3	17	23
		Same Direction	0	0	0	11	68	79
	Year 1	Right Angle	0	0	1	4	18	23
		Same Direction	0	0	2	18	61	81

Regional – RLR Intersections Cost Benefit / (Loss)

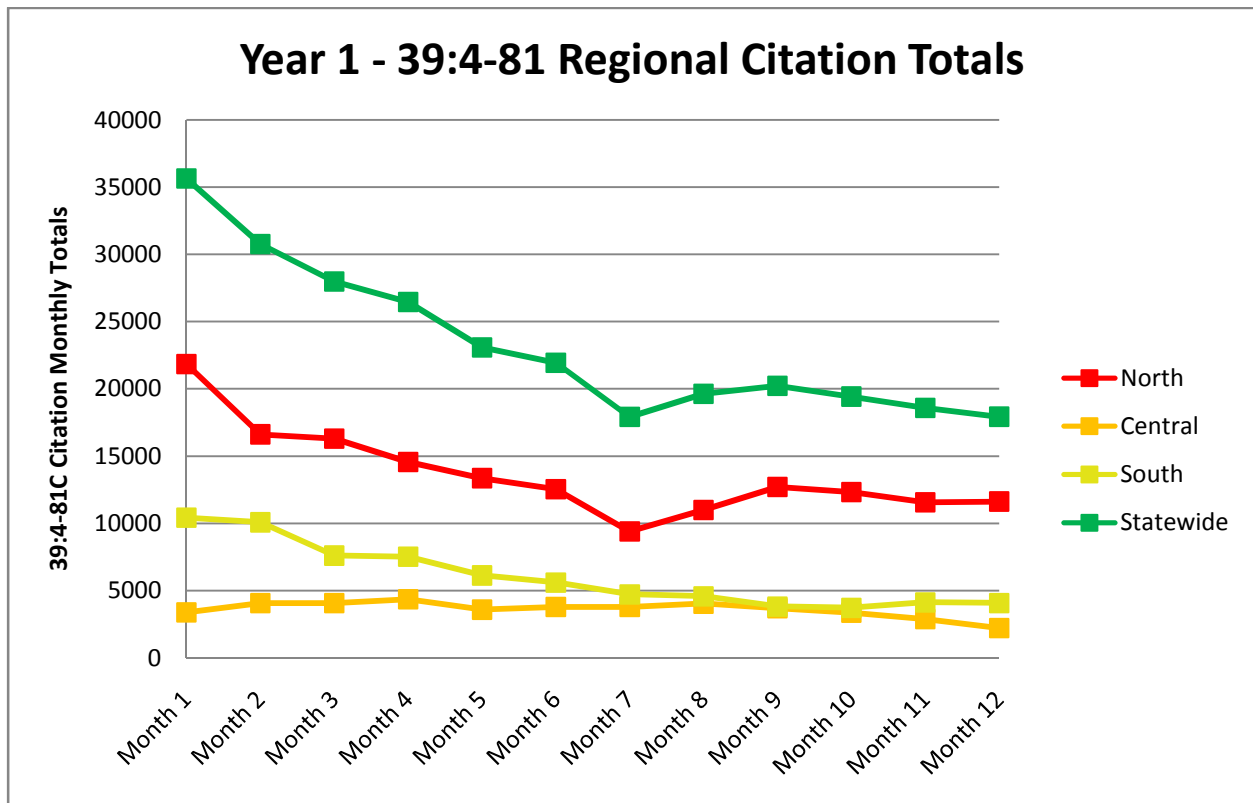
Pre-Camera Year to Year 1

Region	Right Angle	Same Direction	Total
North	(\$256,700)	(\$220,200)	(\$476,900)
Central	(\$322,800)	(\$295,500)	(\$618,300)
South	\$134,700	(\$212,300)	(\$77,600)
Statewide	(\$444,800)	(\$728,000)	(\$1,172,800)

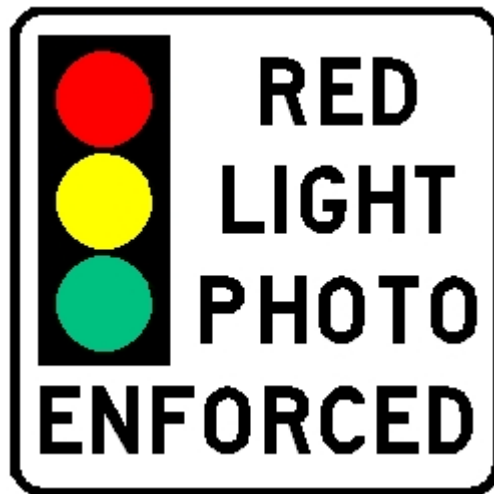
Regional – Reference Intersections Cost Benefit / (Loss)

Pre-Camera Year to Year 1

Region	Right Angle	Same Direction	Total
North	(\$112,000)	(\$210,800)	(\$322,800)
Central	\$180,200	(\$119,400)	\$60,800
South	\$37,500	(\$90,300)	(\$52,800)
Statewide	\$105,700	(\$420,500)	(\$314,800)



**YEAR 1 – MUNICIPAL DATA
CRASH DATA AND COST/BENEFIT
ANALYSIS
CITATION DATA AND GRAPHS
(for locations with one year of operation)**



Crash Data and Cost/Benefit Analysis: Brick Township – Year 1

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Route 70 and Chambers Bridge Rd.	Brick Twp.	Ocean	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	1	\$79,000	0	\$0	\$79,000
			C	0	\$0	2	\$89,800	(\$89,800)	3	\$134,700	4	\$179,600	(\$44,900)
			PDO	1	\$7,400	1	\$7,400	\$0	22	\$162,800	16	\$118,400	\$44,400
				Total Benefit/(Loss)			(\$89,800)	Total Benefit/(Loss)			\$78,500		

Total Benefit (Loss)	(\$11,300)
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Brick Blvd. and Chambers Bridge Rd.	Brick Twp.	Ocean	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	1	\$79,000	(\$79,000)	0	\$0	0	\$0	\$0
			C	1	\$44,900	2	\$89,800	(\$44,900)	1	\$44,900	2	\$89,800	(\$44,900)
			PDO	4	\$29,600	3	\$22,200	\$7,400	6	\$44,400	11	\$81,400	(\$37,000)
				Total Benefit/(Loss)			(\$116,500)	Total Benefit/(Loss)			(\$81,900)		

Total Benefit (Loss)	(\$198,400)
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Brick Blvd. and Cedar Bridge Rd. (Reference Intersection)	Brick Twp.	Ocean	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	1	\$79,000	0	\$0	\$79,000	0	\$0	0	\$0	\$0
			C	1	\$44,900	1	\$44,900	\$0	0	\$0	2	\$89,800	(\$89,800)
			PDO	4	\$29,600	3	\$22,200	\$7,400	3	\$22,200	9	\$66,600	(\$44,400)
				Total Benefit/(Loss)			\$86,400	Total Benefit/(Loss)			(\$134,200)		

Total Benefit (Loss)	(\$47,800)
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Crash Data and Cost/Benefit Analysis: Deptford Township – Year 1

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Route 41 and Deptford Center Dr.	Deptford Twp.	Gloucester	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	5	\$224,500	1	\$44,900	\$179,600	6	\$269,400	3	\$134,700	\$134,700
			PDO	3	\$22,200	0	\$0	\$22,200	4	\$29,600	6	\$44,400	(\$14,800)
				Total Benefit/(Loss)				\$201,800	Total Benefit/(Loss)				\$119,900
Total Benefit (Loss)		\$321,700											

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Almonesson and Deptford Center Dr.	Deptford Twp.	Gloucester	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
(Reference Intersection)			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	1	\$44,900	0	\$0	\$44,900	1	\$44,900	1	\$44,900	\$0
			PDO	3	\$22,200	1	\$7,400	\$14,800	7	\$51,800	11	\$81,400	(\$29,600)
				Total Benefit/(Loss)				\$59,700	Total Benefit/(Loss)				(\$29,600)
Total Benefit (Loss)		\$30,100											

Crash Data and Cost/Benefit Analysis: Glassboro Township – Year 1

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Route 47 and William Dalton Drive	Glassboro Twp.	Gloucester	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	1	\$79,000	0	\$0	\$79,000	0	\$0	0	\$0	\$0
			C	2	\$89,800	0	\$0	\$89,800	1	\$44,900	1	\$44,900	\$0
			O	0	\$0	0	\$0	\$0	3	\$22,200	3	\$22,200	\$0
					Total Benefit/(Loss)		\$168,800	Total Benefit/(Loss)					\$0

Total Benefit (Loss)	\$168,800
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Greentree Rd and William Dalton Dr (Reference Intersection)	Glassboro Twp.	Gloucester	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	0	\$0	1	\$44,900	(\$44,900)	1	\$44,900	0	\$0	\$44,900
			O	1	\$7,400	1	\$7,400	\$0	2	\$14,800	0	\$0	\$14,800
					Total Benefit/(Loss)		(\$44,900)	Total Benefit/(Loss)					\$59,700

Total Benefit (Loss)	\$14,800
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Crash Data and Cost/Benefit Analysis: Gloucester Township – Year 1

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Blackwood-Clementon Rd and Cherrywood Dr	Gloucester Twp.	Camden	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	1	\$216,000	0	\$0	\$216,000
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	1	\$44,900	2	\$89,800	(\$44,900)	2	\$89,800	15	\$673,500	(\$583,700)
			PDO	1	\$7,400	0	\$0	\$7,400	5	\$37,000	5	\$37,000	\$0
				Total Benefit/(Loss)					Total Benefit/(Loss)				
									(\$367,700)				

Total Benefit (Loss)	(\$405,200)
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Blackwood-Clementon Rd and Erial Road	Gloucester Twp.	Camden	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	0	\$0	2	\$89,800	(\$89,800)	4	\$179,600	7	\$314,300	(\$134,700)
			PDO	0	\$0	0	\$0	\$0	13	\$96,200	17	\$125,800	(\$29,600)
				Total Benefit/(Loss)					Total Benefit/(Loss)				
									(\$164,300)				

Total Benefit (Loss)	(\$254,100)
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Blackwood-Clementon Rd and Little Gloucester Road	Gloucester Twp.	Camden	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	1	\$79,000	(\$79,000)	0	\$0	0	\$0	\$0
			C	3	\$134,700	1	\$44,900	\$89,800	7	\$314,300	1	\$44,900	\$269,400
			PDO	1	\$7,400	4	\$29,600	(\$22,200)	13	\$96,200	21	\$155,400	(\$59,200)
				Total Benefit/(Loss)					Total Benefit/(Loss)				
									\$210,200				

Total Benefit (Loss)	\$198,800
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Crash Data and Cost/Benefit Analysis: Gloucester Township – Year 1 (CONTINUED)

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Blackwood-Clementon Rd and Millbridge Road	Gloucester Twp.	Camden	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	1	\$79,000	(\$79,000)
			C	0	\$0	0	\$0	\$0	8	\$359,200	3	\$134,700	\$224,500
			PDO	2	\$14,800	3	\$22,200	(\$7,400)	2	\$14,800	13	\$96,200	(\$81,400)
					Total Benefit/(Loss)			(\$7,400)				Total Benefit/(Loss)	\$64,100

Total Benefit (Loss)	\$56,700
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Little Gloucester Road and Erial Road (Reference Intersection)	Gloucester Twp.	Camden	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	0	\$0	0	\$0	\$0	2	\$89,800	4	\$179,600	(\$89,800)
			PDO	2	\$14,800	5	\$37,000	(\$22,200)	13	\$96,200	5	\$37,000	\$59,200
					Total Benefit/(Loss)			(\$22,200)				Total Benefit/(Loss)	(\$30,600)

Total Benefit (Loss)	(\$52,800)
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Crash Data and Cost/Benefit Analysis: Linden City – Year 1

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
US Rt 1 and South Park Ave	Linden	Union	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	3	\$237,000	(\$237,000)
			C	3	\$134,700	1	\$44,900	\$89,800	3	\$134,700	9	\$404,100	(\$269,400)
			PDO	4	\$29,600	2	\$14,800	\$14,800	18	\$133,200	31	\$229,400	(\$96,200)
				Total Benefit/(Loss)					Total Benefit/(Loss)				

Total Benefit (Loss)	(\$498,000)
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
US Rt 1 and South Stiles Ave	Linden	Union	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	0	\$0	2	\$89,800	(\$89,800)	16	\$718,400	6	\$269,400	\$449,000
			PDO	1	\$7,400	1	\$7,400	\$0	43	\$318,200	67	\$495,800	(\$177,600)
				Total Benefit/(Loss)					Total Benefit/(Loss)				

Total Benefit (Loss)	\$181,600
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
NJ Rt 27 and North Stiles Ave	Linden	Union	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	0	\$0	0	\$0	\$0	4	\$179,600	3	\$134,700	\$44,900
			PDO	1	\$7,400	0	\$0	\$7,400	14	\$103,600	13	\$96,200	\$7,400
				Total Benefit/(Loss)					Total Benefit/(Loss)				

Total Benefit (Loss)	\$59,700
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Crash Data and Cost/Benefit Analysis: Linden City – Year 1 (CONTINUED)

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes						
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)		
US Rt 1 and Pleasant Ave	Linden	Union	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
(Reference Intersection)			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			B	0	\$0	0	\$0	\$0	0	\$0	2	\$158,000	(\$158,000)		
			C	0	\$0	2	\$89,800	(\$89,800)	6	\$269,400	6	\$269,400	\$0		
			PDO	0	\$0	2	\$14,800	(\$14,800)	16	\$118,400	12	\$88,800	\$29,600		
						Total Benefit/(Loss)		(\$104,600)					Total Benefit/(Loss)		(\$128,400)
Total Benefit (Loss)		(\$233,000)													

Crash Data and Cost/Benefit Analysis: New Brunswick City – Year 1

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Easton Avenue and Park Boulevard	New Brunswick City	Middlesex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	1	\$79,000	(\$79,000)	0	\$0	0	\$0	\$0
			C	0	\$0	1	\$44,900	(\$44,900)	0	\$0	0	\$0	\$0
			O	2	\$14,800	1	\$7,400	\$7,400	5	\$37,000	1	\$7,400	\$29,600
					Total Benefit/(Loss)		(\$116,500)	Total Benefit/(Loss)					\$29,600

Total Benefit (Loss)	(\$86,900)
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Easton Ave and Albany St (Reference Intersection)	New Brunswick City	Middlesex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	1	\$79,000	0	\$0	\$79,000	0	\$0	0	\$0	\$0
			C	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			O	3	\$22,200	3	\$22,200	\$0	11	\$81,400	8	\$59,200	\$22,200
					Total Benefit/(Loss)		\$79,000	Total Benefit/(Loss)					\$22,200

Total Benefit (Loss)	\$101,200
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Crash Data and Cost/Benefit Analysis: Newark City – Year 1

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes						
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)		
Broad St. & Market St.	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			C	0	\$0	1	\$44,900	(\$44,900)	3	\$134,700	3	\$44,900	\$134,700		
			O	1	\$7,400	1	\$7,400	\$0	3	\$22,200	3	\$37,000	\$22,200		
				Total Benefit/(Loss)					(\$44,900)	Total Benefit/(Loss)					\$0

Total Benefit (Loss)	(\$44,900)
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes						
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)		
Broad Street and Murray Street	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			C	0	\$0	0	\$0	\$0	0	\$0	1	\$44,900	(\$44,900)		
			O	2	\$14,800	0	\$0	\$14,800	2	\$14,800	0	\$0	\$14,800		
				Total Benefit/(Loss)					\$14,800	Total Benefit/(Loss)					(\$30,100)

Total Benefit (Loss)	(\$15,300)
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes						
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)		
Broad St and Raymond Blvd	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			C	2	\$89,800	1	\$44,900	\$44,900	2	\$89,800	0	\$0	\$89,800		
			O	4	\$29,600	0	\$0	\$29,600	4	\$29,600	0	\$0	\$29,600		
				Total Benefit/(Loss)					\$74,500	Total Benefit/(Loss)					\$119,400

Total Benefit (Loss)	\$193,900
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Crash Data and Cost/Benefit Analysis: Newark City – Year 1 (CONTINUED)

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes					
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	
McCarter Highway and Edison Place	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			C	0	\$0	0	\$0	\$0	3	\$134,700	2	\$89,800	\$44,900	
			PDO	0	\$0	0	\$0	\$0	9	\$66,600	1	\$7,400	\$59,200	
						Total Benefit/(Loss)		\$0					Total Benefit/(Loss)	\$104,100

Total Benefit (Loss)	\$104,100
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes					
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	
McCarter Highway and Lafayette St	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			C	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			O	4	\$29,600	2	\$14,800	\$14,800	3	\$22,200	4	\$29,600	(\$7,400)	
						Total Benefit/(Loss)		\$14,800					Total Benefit/(Loss)	(\$7,400)

Total Benefit (Loss)	\$7,400
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes					
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	
McCarter Highway. & Market St.	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			B	0	\$0	1	\$79,000	(\$79,000)	0	\$0	0	\$0	\$0	
			C	2	\$89,800	3	\$134,700	(\$44,900)	1	\$44,900	3	\$134,700	(\$89,800)	
			O	3	\$22,200	0	\$0	\$22,200	17	\$125,800	8	\$59,200	\$66,600	
						Total Benefit/(Loss)		(\$101,700)					Total Benefit/(Loss)	(\$23,200)

Total Benefit (Loss)	(\$124,900)
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Crash Data and Cost/Benefit Analysis: Newark City – Year 1 (CONTINUED)

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
McCarter Highway. & South St.	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	1	\$44,900	4	\$179,600	(\$134,700)	3	\$134,700	4	\$179,600	(\$44,900)
			O	2	\$14,800	0	\$0	\$14,800	4	\$29,600	13	\$96,200	(\$66,600)
				Total Benefit/(Loss)					Total Benefit/(Loss)				
									(\$119,900)				
									Total Benefit/(Loss)				
									(\$111,500)				

Total Benefit (Loss)	(\$231,400)
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Mulberry St. & Market St.	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	0	\$0	0	\$0	\$0	1	\$44,900	0	\$0	\$44,900
			O	0	\$0	0	\$0	\$0	4	\$29,600	4	\$29,600	\$0
				Total Benefit/(Loss)					Total Benefit/(Loss)				
									\$0				
									Total Benefit/(Loss)				
									\$44,900				

Total Benefit (Loss)	\$44,900
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Raymond Blvd and Raymond Pl West	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	1	\$79,000	(\$79,000)	0	\$0	0	\$0	\$0
			C	0	\$0	1	\$44,900	(\$44,900)	0	\$0	1	\$44,900	(\$44,900)
			O	0	\$0	0	\$0	\$0	4	\$29,600	3	\$22,200	\$7,400
				Total Benefit/(Loss)					Total Benefit/(Loss)				
									(\$123,900)				
									Total Benefit/(Loss)				
									(\$37,500)				

Total Benefit (Loss)	(\$161,400)
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Crash Data and Cost/Benefit Analysis: Newark City – Year 1 (CONTINUED)

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes					
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	
Raymond Blvd, Market St and Prospect St	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			C	0	\$0	0	\$0	\$0	1	\$44,900	1	\$44,900	\$0	
			O	1	\$7,400	0	\$0	\$7,400	5	\$37,000	5	\$37,000	\$0	
							Total Benefit/(Loss)	\$7,400					Total Benefit/(Loss)	\$0

Total Benefit (Loss)	\$7,400
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes					
				Pre-Camera (2009)	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera (2009)	Cost	Year 1	Cost	Difference Benefit (Loss)	
Broad St. & E. / W. Kinney St. (Reference Intersection)	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			C	0	\$0	0	\$0	\$0	0	\$0	2	\$89,800	(\$89,800)	
			O	0	\$0	1	\$7,400	(\$7,400)	3	\$22,200	2	\$14,800	\$7,400	
							Total Benefit/(Loss)	(\$7,400)					Total Benefit/(Loss)	(\$82,400)

Total Benefit (Loss)	(\$89,800)
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Crash Data and Cost/Benefit Analysis: Stratford Borough – Year 1

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Route 30 and White Horse Road	Stratford	Camden	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	0	\$0	2	\$89,800	(\$89,800)	2	\$89,800	3	\$134,700	(\$44,900)
			O	2	\$14,800	2	\$14,800	\$0	1	\$7,400	5	\$37,000	(\$29,600)
						Total Benefit/(Loss)						Total Benefit/(Loss)	
												(\$74,500)	

Total Benefit (Loss)	(\$164,300)
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes				
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)
Laurel Road and Atlantic Avenue	Stratford	Camden	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
(Reference Intersection)			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0
			C	1	\$44,900	0	\$0	\$44,900	1	\$44,900	3	\$134,700	(\$89,800)
			O	2	\$14,800	2	\$14,800	\$0	9	\$66,600	9	\$66,600	\$0
						Total Benefit/(Loss)						Total Benefit/(Loss)	
												(\$89,800)	

Total Benefit (Loss)	(\$44,900)
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Crash Data and Cost/Benefit Analysis: Woodbridge Township – Year 1

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes						
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)		
Route 1 and Avenel St	Woodbridge	Middlesex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			C	0	\$0	0	\$0	\$0	1	\$44,900	8	\$359,200	(\$314,300)		
			O	0	\$0	0	\$0	\$0	8	\$59,200	9	\$66,600	(\$7,400)		
				Total Benefit/(Loss)					\$0	Total Benefit/(Loss)					(\$321,700)

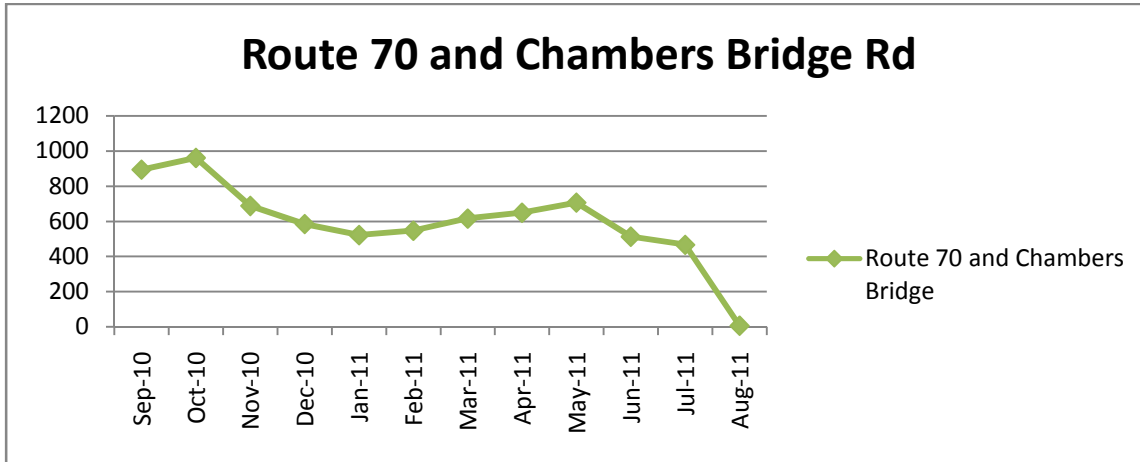
Total Benefit (Loss)	(\$321,700)
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes						
				Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)	Pre-Camera	Cost	Year 1	Cost	Difference Benefit (Loss)		
Route 1 and Smith St	Woodbridge	Middlesex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
(Reference Intersection)			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			B	1	\$79,000	1	\$79,000	\$0	0	\$0	0	\$0	\$0		
			C	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0		
			O	2	\$14,800	0	\$0	\$14,800	4	\$29,600	5	\$37,000	(\$7,400)		
				Total Benefit/(Loss)					\$14,800	Total Benefit/(Loss)					(\$7,400)

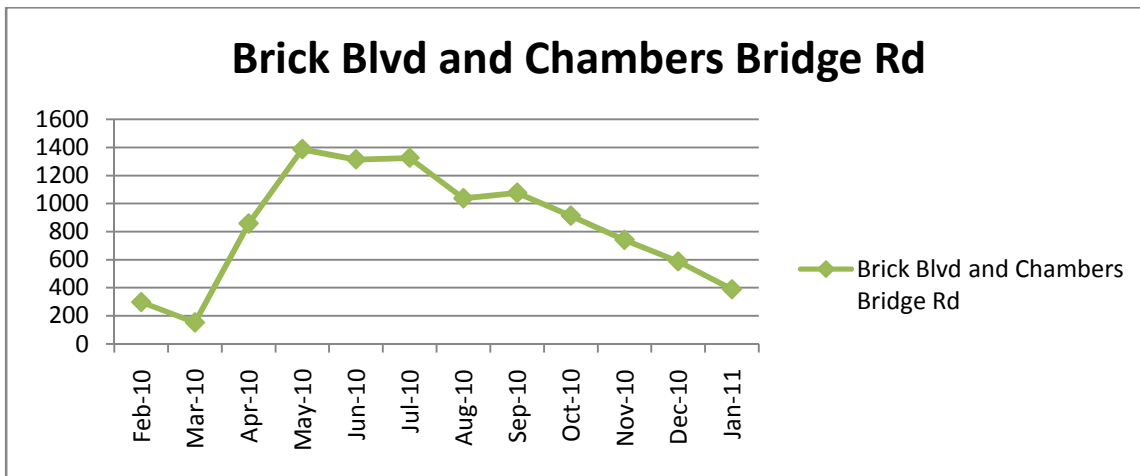
Total Benefit (Loss)	\$7,400
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Citation Data Analysis: Brick Township – Year 1

Citations (39:4-81)	Municipality	County	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Total for Year 1
Route 70 and Chambers Bridge	Brick	Ocean	893	960	687	584	521	546	615	648	706	512	466	6	7144

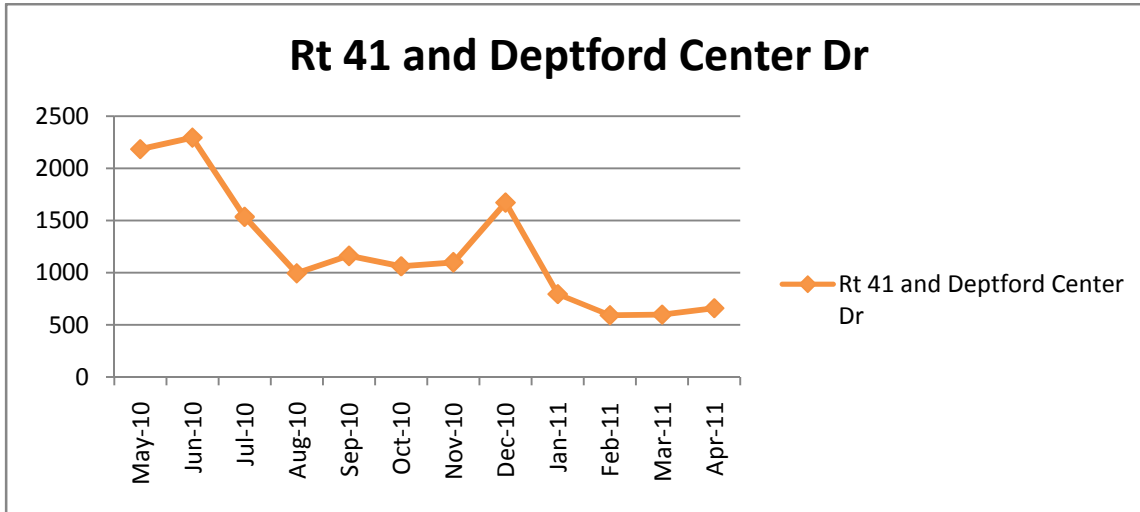


Citations (39:4-81)	Municipality	County	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Total for Year 1
Brick and Chambers Bridge	Brick	Ocean	299	154	858	1386	1314	1325	1037	1076	913	742	588	390	10082



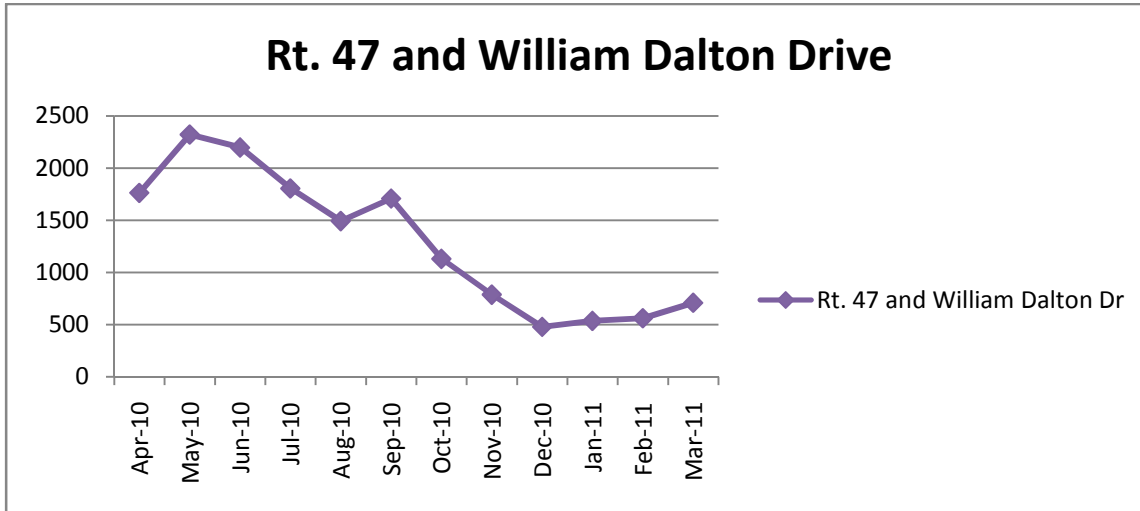
Citation Data Analysis: Deptford Township – Year 1

Citations (39:4-81)	Municipality	County	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	Total for Year 1
Route 41 and Deptford Center Dr.	Deptford	Gloucester	2184	2294	1535	993	1161	1061	1099	1671	794	592	597	659	14640



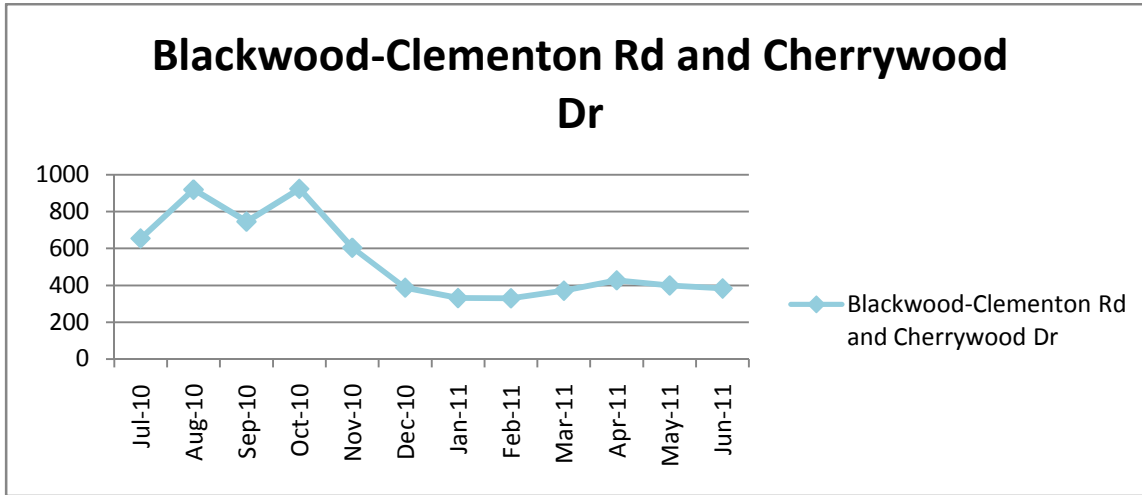
Citation Data Analysis: Glassboro Township – Year 1

Citations (39:4-81)	Municipality	County	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Total for Year 1
Route 47 and William Dalton	Glassboro	Gloucester	1762	2320	2196	1804	1492	1708	1130	787	479	536	561	709	15484

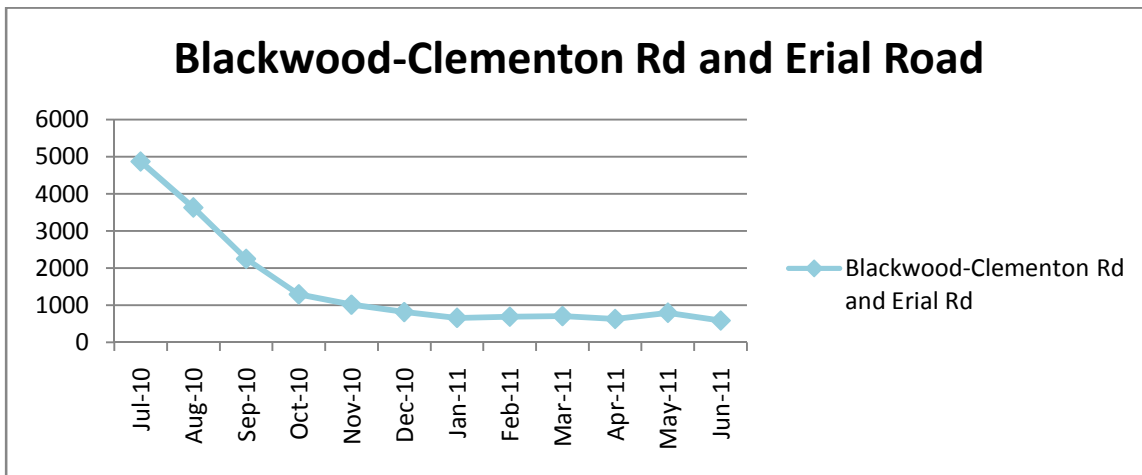


Citation Data Analysis: Gloucester Township – Year 1

Citations (39:4-81)	Municipality	County	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Total for Year 1
Blackwood-Clementon Rd and Cherrywood Dr	Gloucester	Camden	654	919	745	923	603	386	330	329	370	426	398	382	6465

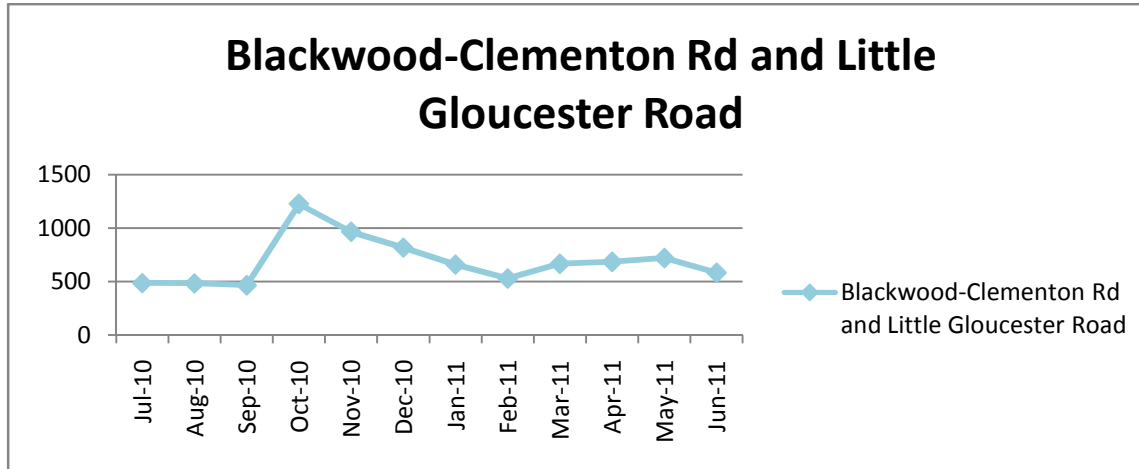


Citations (39:4-81)	Municipality	County	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Total for Year 1
Blackwood-Clementon Rd and Erial Road	Gloucester	Camden	4867	3631	2251	1295	1017	819	662	691	708	633	798	590	17962

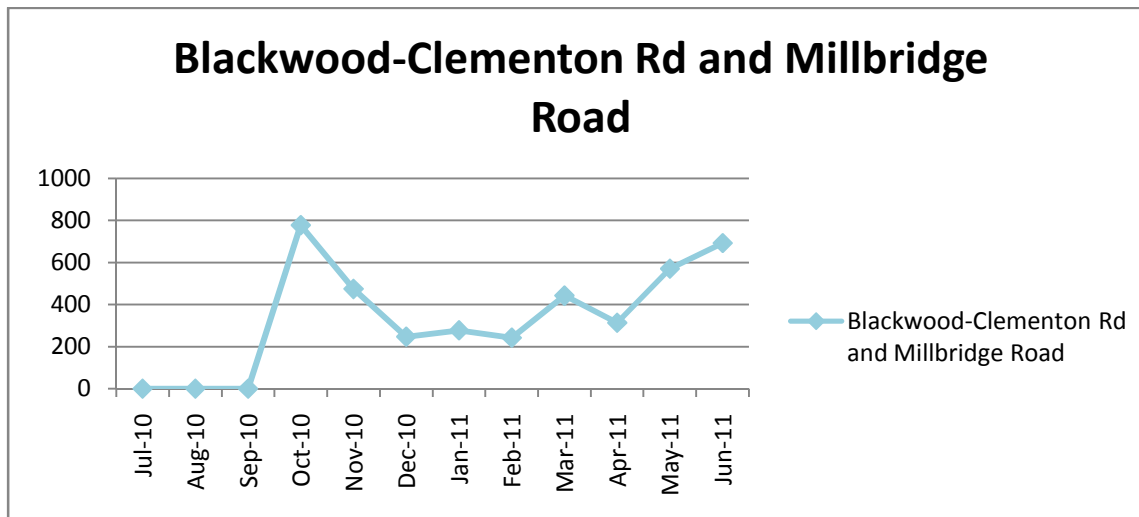


Citation Data Analysis: Gloucester Township – Year 1 (CONTINUED)

<u>Citations (39:4-81)</u>	Municipality	County	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Total for Year 1
Blackwood-Clementon Rd and Little Gloucester Road	Gloucester	Camden	485	482	465	1225	965	817	658	528	666	684	719	582	8276

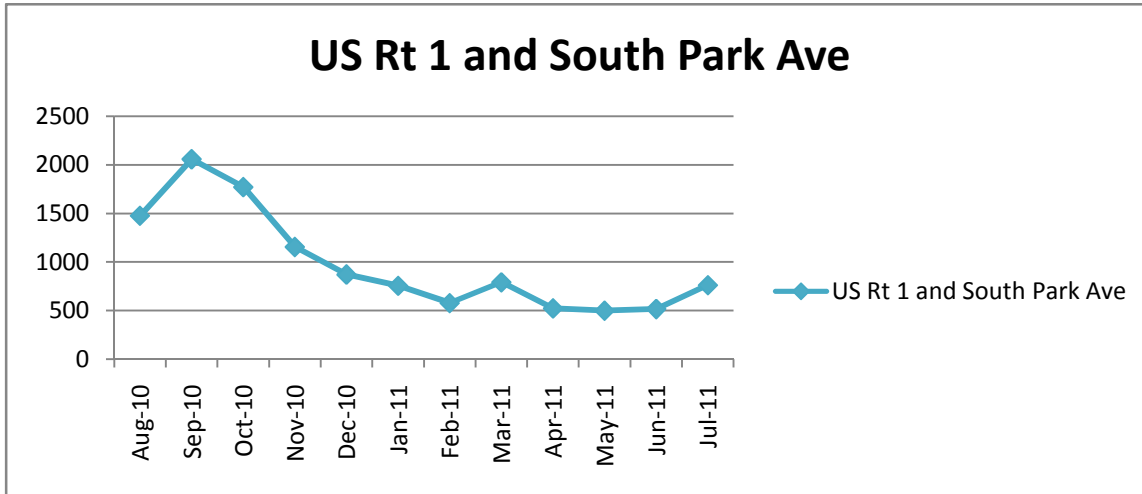


<u>Citations (39:4-81)</u>	Municipality	County	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11
Blackwood-Clementon Rd and Millbridge Road	Gloucester	Camden	0	0	0	777	474	247	277	242

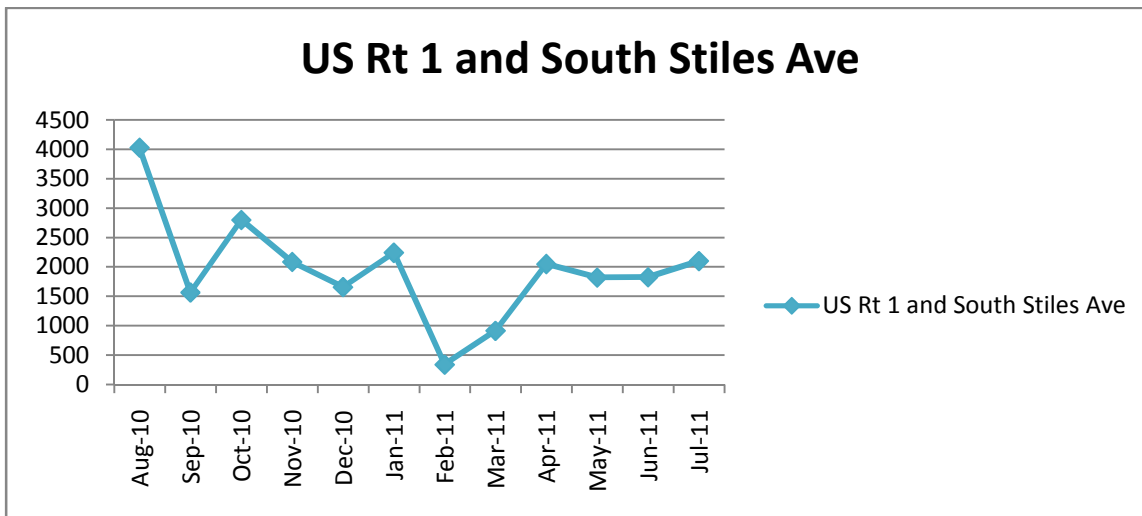


Citation Data Analysis: Linden City – Year 1

Citations (39:4-81)	Municipality	County	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Total for Year 1
Route 1 and South Park Ave	Linden	Union	1474	2056	1769	1154	870	754	576	790	522	498	516	760	11739

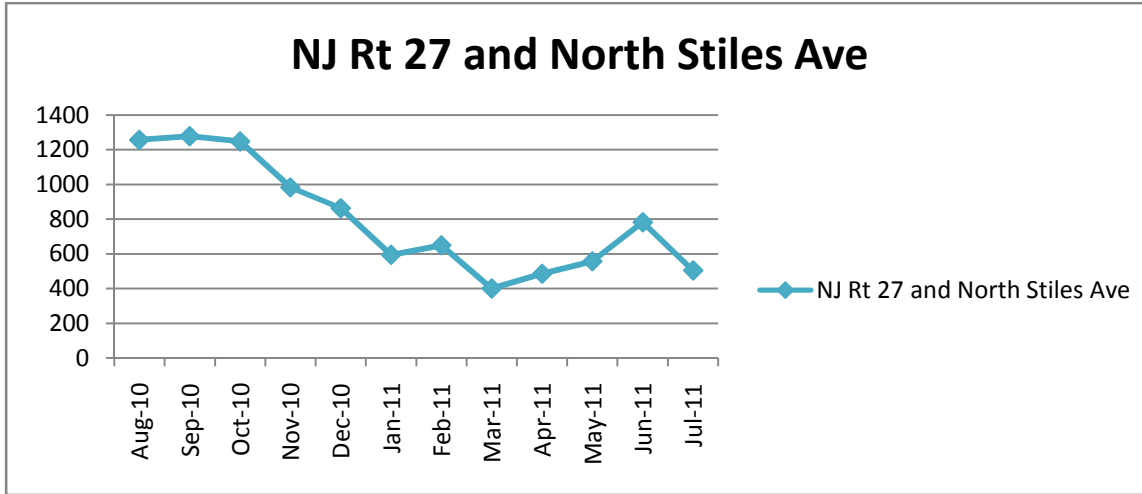


Citations (39:4-81)	Municipality	County	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Total for Year 1
Route 1 and South Stiles Ave	Linden	Union	4026	1567	2799	2085	1658	2242	342	916	2050	1820	1826	2101	23432



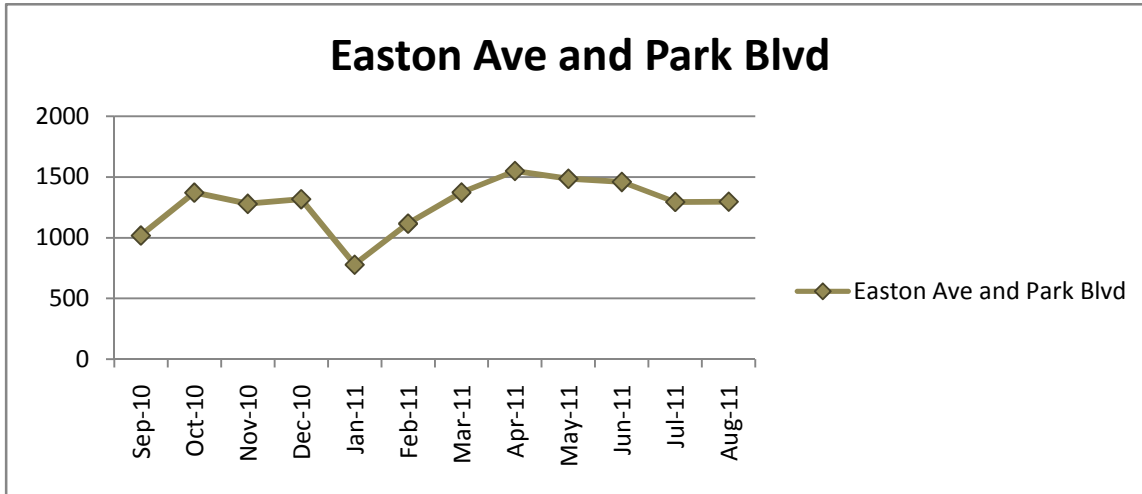
Citation Data Analysis: Linden City – Year 1 (CONTINUED)

Citations (39:4-81)	Municipality	County	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Total for Year 1
Route 27 and North Stiles Ave	Linden	Union	1257	1278	1248	983	863	594	649	400	485	557	782	504	9600



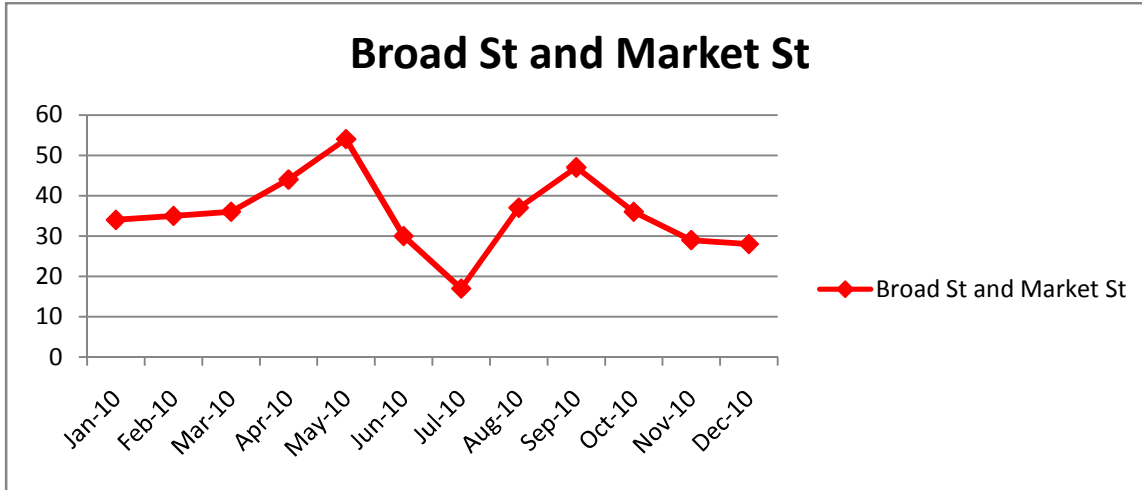
Citation Data Analysis: New Brunswick City – Year 1

Citations (39:4-81)	Municipality	County	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Total for Year 1
Easton Ave and Park Blvd	New Brunswick City	Middlesex	1018	1371	1279	1317	778	1116	1372	1549	1485	1459	1294	1296	15334

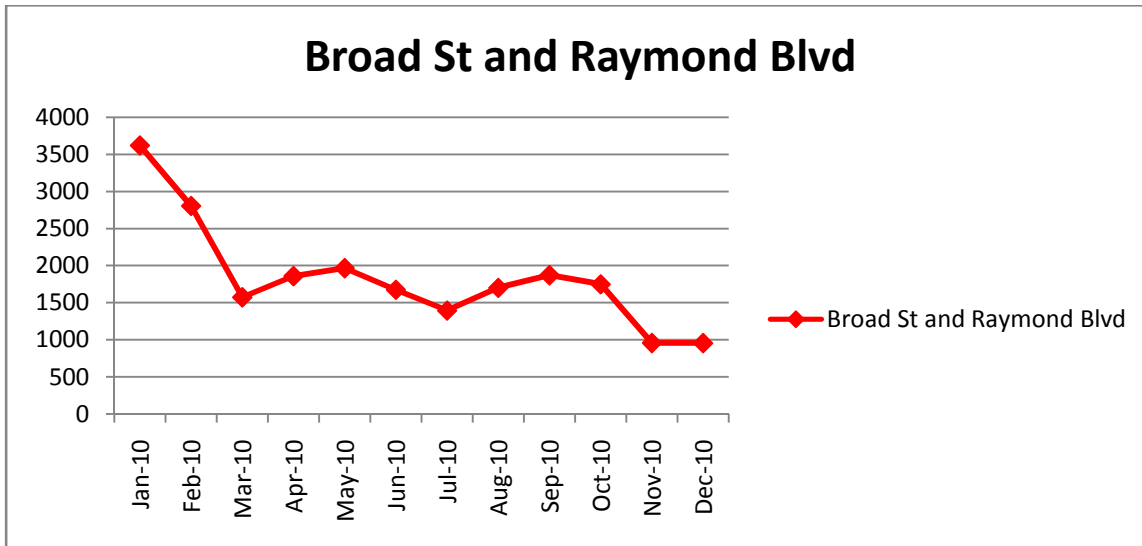


Citation Data Analysis: Newark City – Year 1

Citations (39:4-81)	Municipality	County	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10
Broad and Market	Newark	Essex	34	35	36	44	54	30	17	37	47	36	29	28

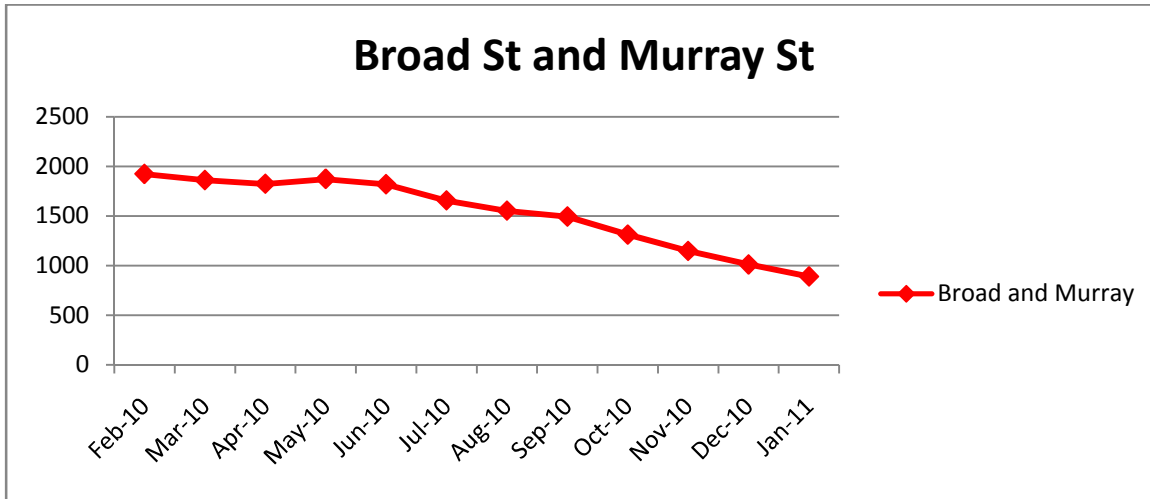


Citations (39:4-81)	Municipality	County	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10
Broad and Raymond	Newark	Essex	3618	2804	1574	1859	1966	1675	1396	1701	1872	1749	959	957

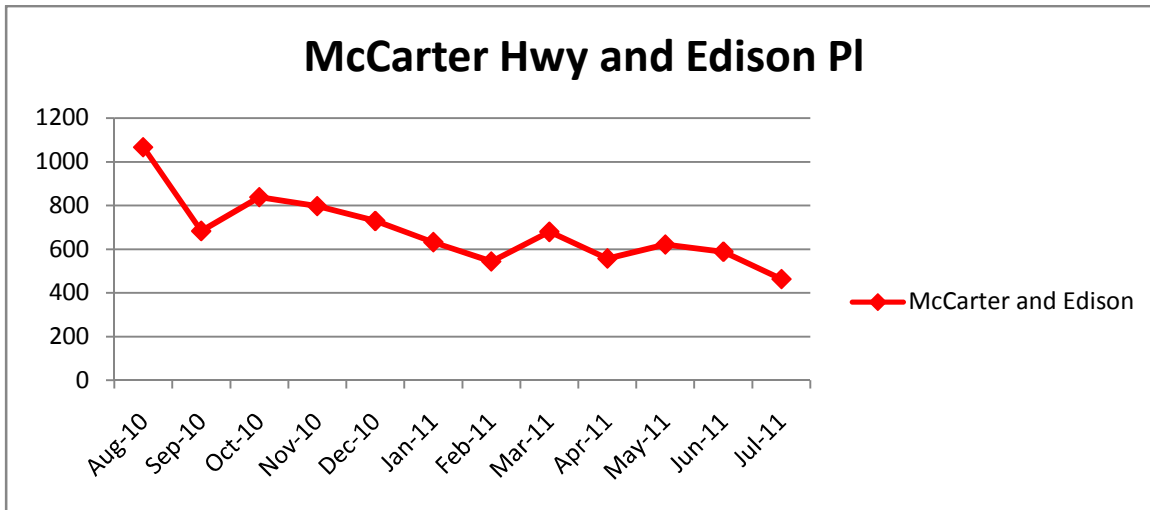


Citation Data Analysis: Newark City – Year 1 (CONTINUED)

Citations (39:4-81)	Municipality	County	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11
Broad and Murray	Newark	Essex	1923	1861	1824	1873	1819	1656	1553	1494	1312	1148	1012	891

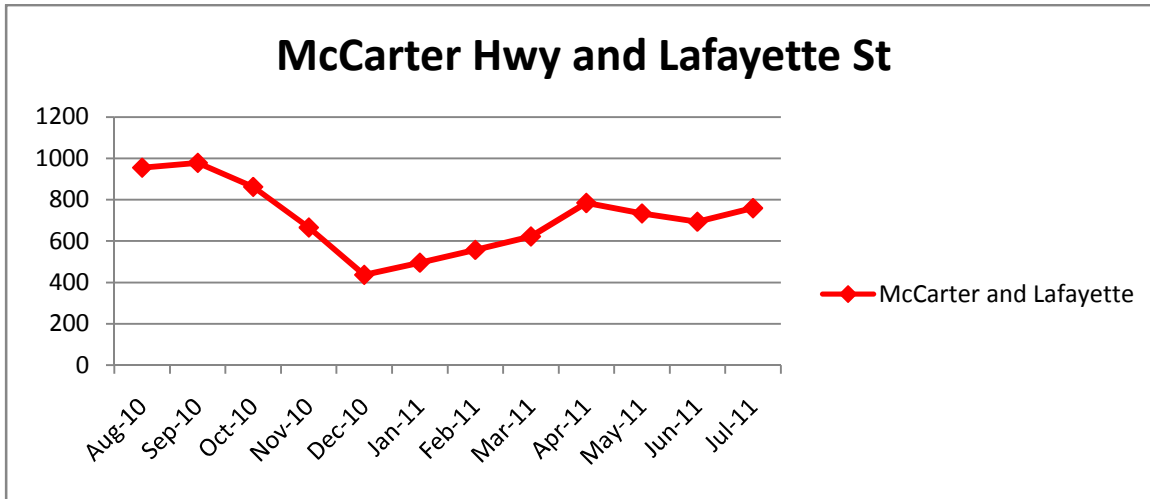


Citations (39:4-81)	Municipality	County	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
McCarter and Edison	Newark	Essex	1066	683	838	797	729	632	543	679	557	621	588	463

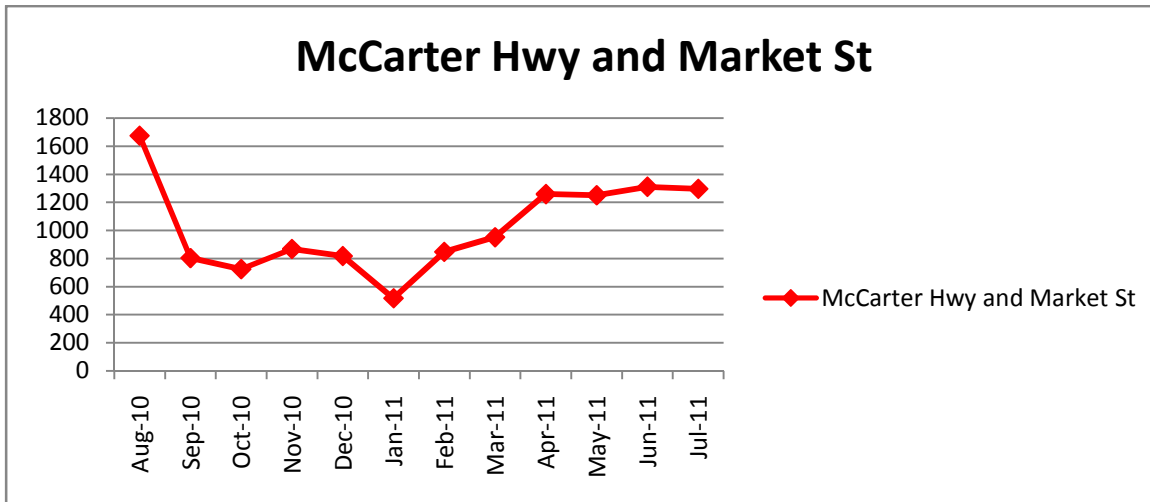


Citation Data Analysis: Newark City – Year 1 (CONTINUED)

Citations (39:4-81)	Municipality	County	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
McCarter and Lafayette	Newark	Essex	955	978	862	665	436	495	557	622	784	733	693	759

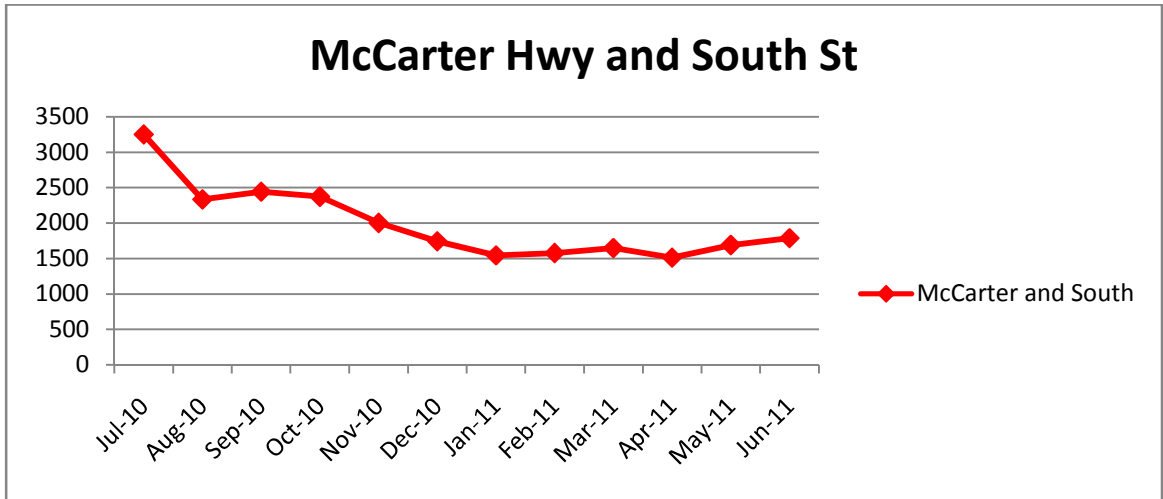


Citations (39:4-81)	Municipality	County	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
McCarter and Market	Newark	Essex	1673	803	724	867	817	517	847	951	1258	1250	1310	1295

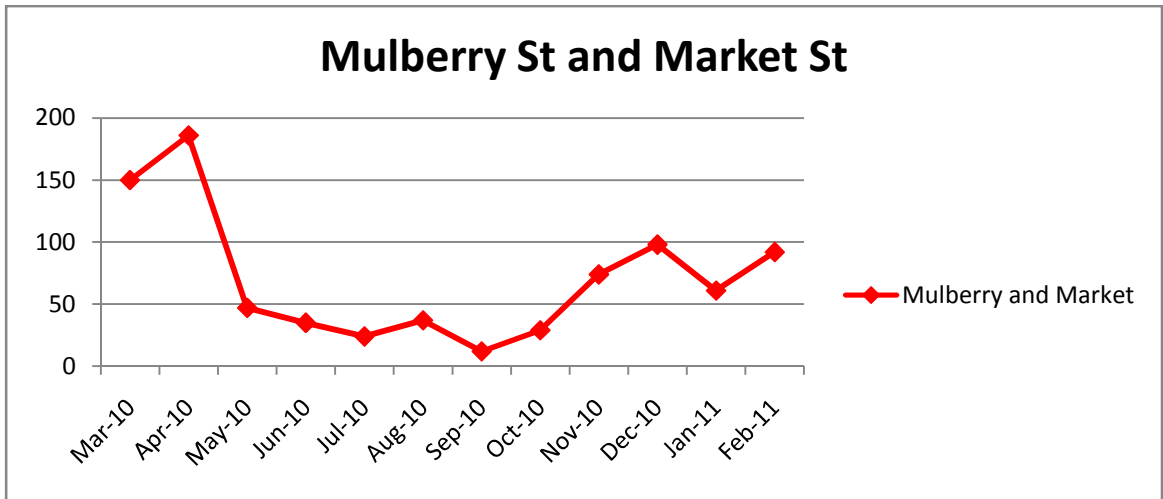


Citation Data Analysis: Newark City – Year 1 (CONTINUED)

Citations (39:4-81)	Municipality	County	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11
McCarter and South	Newark	Essex	3251	2334	2444	2373	2003	1742	1544	1577	1647	1513	1691	1788

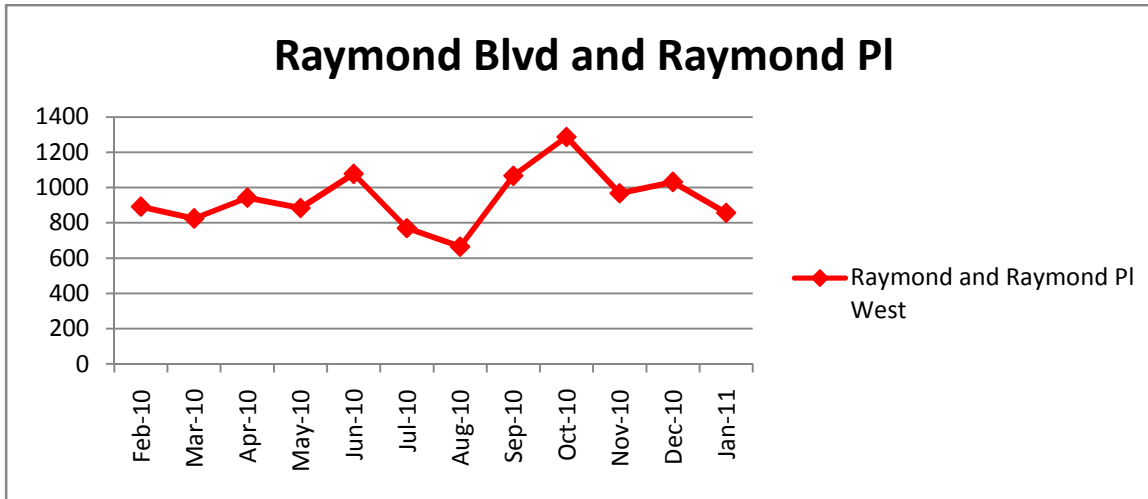


Citations (39:4-81)	Municipality	County	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11
Mulberry and Market	Newark	Essex	150	186	47	35	24	37	12	29	74	98	61	92

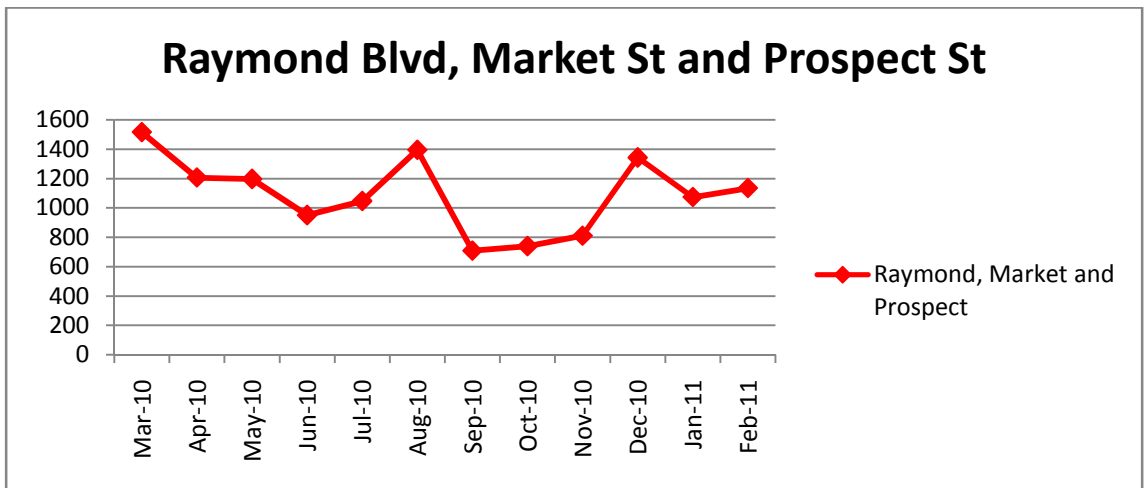


Citation Data Analysis: Newark City – Year 1 (CONTINUED)

Citations (39:4-81)	Municipality	County	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11
Raymond and Raymond PI West	Newark	Essex	892	825	943	884	1078	770	665	1067	1287	968	1032	857

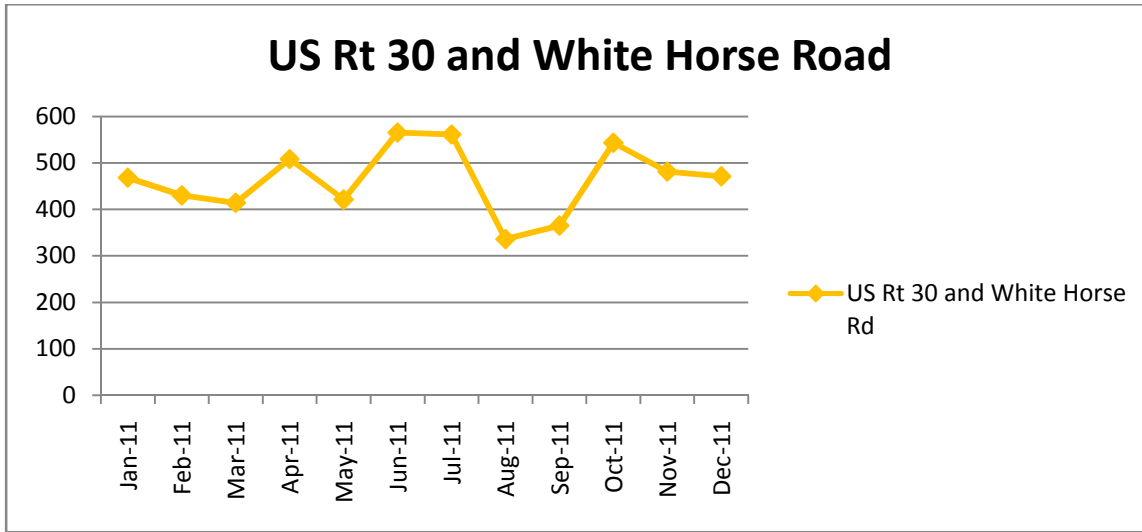


Citations (39:4-81)	Municipality	County	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11
Raymond, Market and Prospect	Newark	Essex	1515	1206	1196	950	1046	1394	708	739	810	1342	1073	1134



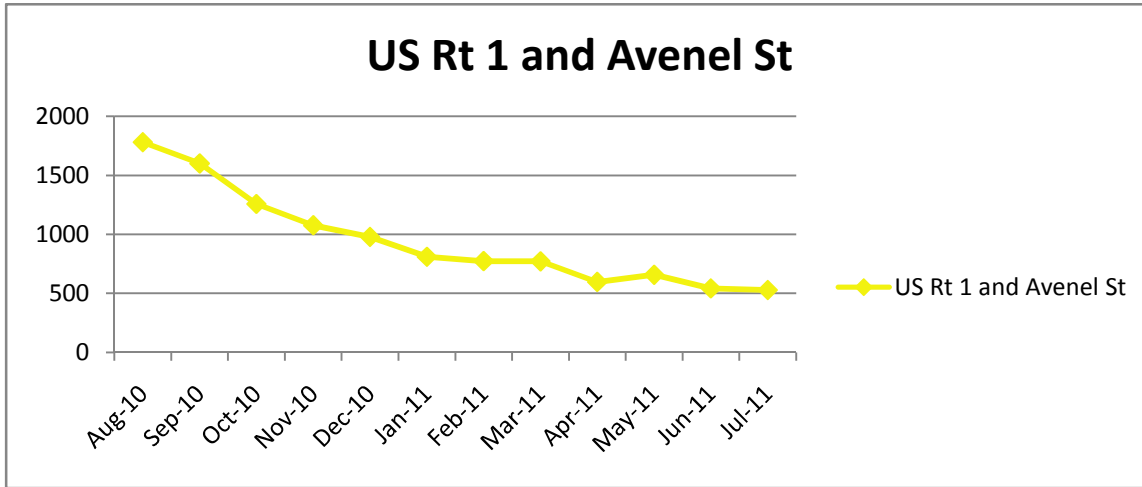
Citation Data Analysis: Stratford Borough – Year 1

Citations (39;4-81)	Municipality	County	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
Route 30 and White Horse Rd	Stratford	Camden	468	430	414	508	421	565	561	336	365	543	481	471



Citation Data Analysis: Woodbridge Township – Year 1

Citations (39:4-81)	Municipality	County	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
Route 1 and Avenel St	Woodbridge	Middlesex	1780	1600	1257	1076	978	809	773	771	596	657	541	528



YEAR 2 – MUNICIPAL DATA
CRASH DATA & COST/BENEFIT ANALYSIS
CITATION DATA & GRAPHS
(for locations with two years of operation)



Crash Data and Cost/Benefit Analysis: Newark City – Year 2

LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes					
				Year 1	Cost	Year 2	Cost	Difference Benefit (Loss)	Year 1	Cost	Year 2	Cost	Difference Benefit (Loss)	
Broad St. & Market St.	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			C	1	\$44,900	0	\$0	\$44,900	3	\$134,700	1	\$44,900	\$89,800	
			O	1	\$7,400	1	\$7,400	\$0	3	\$22,200	2	\$14,800	\$7,400	
						Total Benefit/(Loss)		\$44,900					Total Benefit/(Loss)	\$97,200

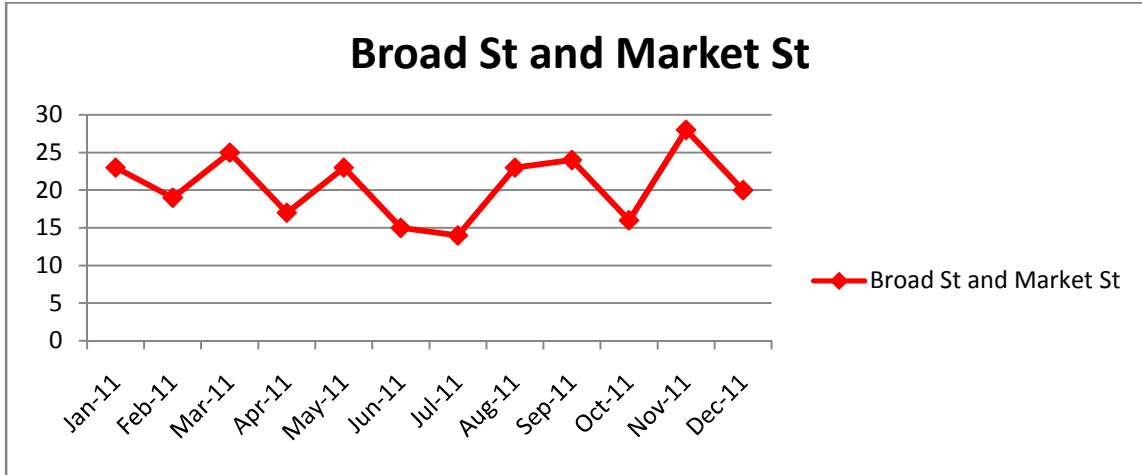
Total Benefit (Loss)	\$142,100
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LOCATION	MUNICIPALITY	COUNTY	SEVERITY	Right Angle Crashes					Same Direction Crashes					
				Year 1	Cost	Year 2	Cost	Difference Benefit (Loss)	Year 1	Cost	Year 2	Cost	Difference Benefit (Loss)	
Broad St. & Raymond Blvd.	Newark City	Essex	K	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			A	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			B	0	\$0	0	\$0	\$0	0	\$0	0	\$0	\$0	
			C	1	\$44,900	0	\$0	\$44,900	0	\$0	1	\$44,900	(\$44,900)	
			O	0	\$0	0	\$0	\$0	0	\$0	3	\$22,200	(\$22,200)	
						Total Benefit/(Loss)		\$44,900					Total Benefit/(Loss)	(\$67,100)

Total Benefit (Loss)	(\$22,200)
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Citation Data Analysis: Newark City – Year 2

Citations (39:4-81)	Municipality	County	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
Broad and Market	Newark	Essex	23	19	25	17	23	15	14	23	24	16	28	20



Citations (39:4-81)	Municipality	County	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
Broad and Raymond	Newark	Essex	887	754	801	840	789	816	909	927	842	919	642	538

