



New York City Red Light Camera Program

Program
Review 1994-2015

2016 Report



EXECUTIVE SUMMARY

In 1988, the New York State (the State or NYS) Legislature and Governor enacted Vehicle and Traffic Law §1111-a, which granted New York City (the City or NYC) the authority to demonstrate the effectiveness of traffic-control signal photo violation-monitoring systems. New York City used this authorization to launch the nation's first Red Light Camera program in 1994 (the Program). The State Legislature has extended the duration of the New York City's pilot program seven times, with the current authorization set to expire in December 2019. This report is submitted to satisfy the requirements of VTL § 1111-a. A few findings of this report include:

- The Program has been effective at deterring drivers from running red lights – the average daily number of red light running violations issued at each camera location has declined by 75 percent.
- The Program has helped prevent crashes which are associated with red light running. A comparison of the years prior to the launch of the Program to a more recent period shows that reportable right angle crashes at signalized intersections have declined by 62 percent citywide, from 7,221 to 2,723 annually. In addition severe injuries from such crashes have declined by 76 percent, from 633 to 155 annually.
- The Program has not led to an increase in rear end crashes. A comparison of the years prior to the launch of the Program to a more recent period shows that reportable rear end crashes at signalized intersections have declined by 39 percent citywide, from 7,348 annually to 4,464 annually. In addition severe injuries from such crashes have declined by 61 percent, from 341 to 134 annually.

The Program has proven to be a valuable tool for deterring law-breaking and protecting New Yorkers at signalized intersections.

THE DANGER POSED BY RED LIGHT RUNNING

A 2009 analysis of fatal red light running crashes throughout the nation showed that nearly two-thirds of the people who were killed were people other than the driver who violated the law and ran the red light, including passengers in the red light running vehicles, occupants of other vehicles, pedestrians, and bicyclists.¹ Red light running is particularly dangerous in American cities, where drivers who run red lights, stop signs, and other traffic devices are responsible for a large portion of injury crashes. Crashes caused by motorists who violate traffic signals are highly associated with fatal and severe injury high speed right angle crashes.

Red light running is very common. While 94 percent of New York State drivers consider it unacceptable to drive through a traffic light that just turned red when they could have stopped

¹ Hu, W.; McCartt, A.T. and Teoh, E.R. 2011. Effects of red light camera enforcement on fatal crashes in large US cities. *Journal of Safety Research* 42(4):277-82

safely, more than 42 percent of drivers admitted doing so within the previous month.² A 2015 Hunter College study, which studied driver behavior at thirteen New York City intersections, found that nine percent of observed New York City drivers violate red lights.³

RED LIGHT RUNNING CAUSES

Motorists who are speeding are much more likely to run red lights, because vehicles which are travelling faster need more time and take a longer distance to come to a complete stop. The amber phase is timed to provide drivers who are driving at the prevailing speed the opportunity to either travel at a consistent speed through the intersection before the light turns red, or to come to a complete stop before entering the intersection. Speeding drivers are therefore more likely to find themselves unable to come to complete stop without “stopping short” and risking a rear end crash.

Drivers who are talking on cell phones, texting or using other electronic devices, or are otherwise distracted often fail to perceive traffic signals. Estimates indicate that drivers using cell phones “look but fail to see” up to 50 percent of the information in their environment; even looking through their windshield, it will take longer to notice and react to a traffic signal change when using a cell phone.⁴ In addition, distracted drivers make fewer glances to traffic lights, and some drivers fail to even look at traffic signals.⁵

ENHANCING SAFETY AT INTERSECTIONS

In New York City, about half of fatal traffic crashes occur at intersections. The New York City Department of Transportation (NYC DOT) takes a number of steps to promote safety at intersections, in addition to the Program.

Right on Red Prohibition

Unlike almost all other U.S. cities, right turns on red are severely restricted in New York City. Within the five boroughs, this movement is permitted only where posted, and has been most prevalent in Staten Island, where lower traffic and pedestrian volumes allow for the safe movement of both vehicles and pedestrians. Studies conducted after an array of states adopted laws which enabled right-turn-on-red found marked increases in pedestrian and bicyclist collisions at intersections.⁶ An analysis of intersection crashes in four states found that right-

² AAA Foundation for Traffic Safety, 2014 Traffic Safety Culture Index (January 2015) available at <https://www.aaafoundation.org/sites/default/files/2014TSClreport.pdf>

³ Peter Tuckel, William Milczarski, James Rubin *For Many New York City Motorists A Red Light Does Not Mean Stop* Hunter College 2015

⁴ Understanding the Distracted Brain: Why Driving While Using Hands-Free Cell Phones is Risky Behavior. National Safety Council White Paper 2012

⁵ Understanding the Distracted Brain: Why Driving While Using Hands-Free Cell Phones is Risky Behavior. National Safety Council White Paper 2012

⁶ Preusser, Leaf, DeBartolo, Blomberg *The Effect of Right Turn on Red on Pedestrian and Bicyclist Accidents* US Dept of Transportation National Highway Traffic Safety Administration 1981

turn-on-red crashes frequently involved pedestrians and bicyclists, and 93 percent of these crashes resulted in injuries to the pedestrians and bicyclists.

Enhanced Signal Visibility

Signal head visibility can be enhanced by increasing the size of traffic signal lenses from 8 to 12 inches. In order to advance Vision Zero, DOT is upgrading traffic signal lenses on corridors with a speed limit of 30 MPH or above, or at other appropriate intersections. Studies indicate that these increased signal lenses may increase compliance, and thereby reduce the frequency of crashes, particularly right angle crashes.

All-Red Interval

An all-red interval is the portion of a traffic signal cycle where all approaches have a red-signal display. The purpose of the all-red interval is to allow time for vehicles that entered the intersection during the amber phase to clear the intersection before the traffic-signal display for the cross street approaches turns to green. All traffic signals in New York City have an all-red interval.

HOW RED LIGHT CAMERAS WORK

When a vehicle runs through a red light at a camera-monitored intersection, sensors embedded in the roadway trigger a digital camera, which is situated approximately fifty to one hundred feet back from the stop-line. The camera captures a series of photographs showing the vehicle before and after it enters the intersection, with the traffic signal displaying a red light in each photo. The resulting photos show the vehicle, the intersection, and the traffic signal all in one frame.

The photos are inspected for quality and are then delivered to a specially trained team of NYC DOT Review Technicians who review each and every photograph and determine if the photographs provide adequate evidence to issue a Notice of Liability (NOL).

An NOL includes three photos: the vehicle before the stop bar when the traffic signal is red, the same vehicle after the stop bar and crosswalk while the traffic signal is still red, and a clear and readable enlargement of the vehicle's license plate. In addition, the NOL contains the name and address of the vehicle owner, the registration number of the vehicle involved in the violation, the location where the violation took place, the date and time of the violation, and the identification number of the camera which recorded the violation.

The NOLs are issued to the registered owner of the vehicle. An NOL, much like a parking ticket, obligates the vehicle owner to pay a fine, but does not cause points to be assessed against the driver's license, nor is the violation used for insurance purposes. The red light camera fine is \$50.

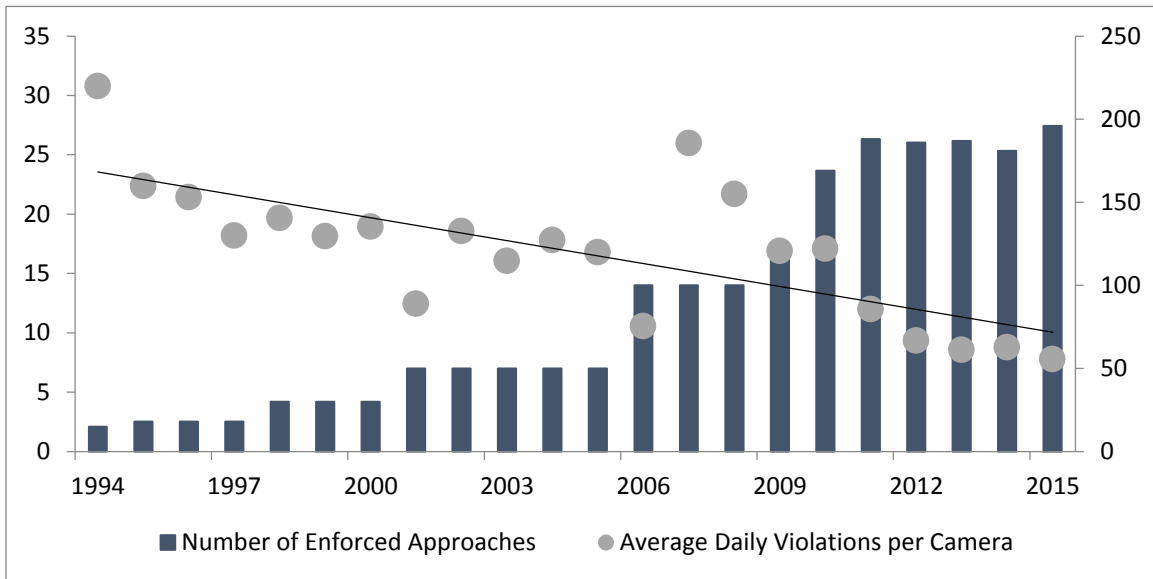
RED LIGHT CAMERAS DETER RED LIGHT RUNNING VIOLATIONS

The purpose of the Program is to deter motorists from running red lights. Accordingly, the more successful the Program is, the fewer red light violations we should observe over time.

In the first year of the Program, the average camera issued 31.8 NOLs on a daily basis. In 2015, the average camera issued 7.8 NOLs on a daily basis - a 75 percent drop. This data indicates that the Program has enhanced public safety by serving as an effective deterrent to red light running. Some of the year to year fluctuation in the number of NOLs issued can be attributed to years in which the Program was expanded and new sites were installed.

The daily average number of NOLs issued declines as the Legislature allowed the City to protect more intersections with red light cameras. This is an expected result and confirms that the consistent, predictable, citywide enforcement provided by red light cameras deters dangerous red light running.

Change in Daily Average NOL per Camera



RED LIGHT CAMERA: DESCRIPTION OF LOCATIONS

Though the precise number may vary on a daily basis due to maintenance, on average, 184 red light cameras were operating at 150 intersections in New York City in 2015. In addition, as a further deterrent, several hundred dummy cameras (non-functional shells) have been installed throughout the City's five boroughs.

Borough	Number of Red Light Camera Enforced Intersections
Bronx	24
Brooklyn	60
Manhattan	16
Queens	64
Staten Island	20

Locations are selected based upon a review of several factors including crash history of the intersection, engineering judgment, and community and elected official requests. Red light cameras generally tend to be sited on or adjacent to major, multi-lane, arterial streets which carry high volumes of vehicles and high frequency of red light running violations.

The success of red light cameras in enhancing public safety throughout the five boroughs has led to the City's continued interest in additional expansion. While the Program has been very effective in reducing unsafe driving on the City's streets, the statutory cap of 150 intersections - which is only about one percent of the City's 12,700 signalized intersections - prevents a broader application of this important public safety initiative. The Program is effective at deterring red light violations because motorists expect consistent enforcement across the City. An increase in the total number of intersections where red light cameras can be operated by the City would make this public safety tool even more effective.

RED LIGHT CAMERAS PREVENT SERIOUS RED LIGHT RELATED CRASHES

When identifying crash-prone locations and evaluating a project's success, NYC DOT focuses on crashes which result in death or severe injury. Individuals who have been severely injured typically depart the crash scene in an ambulance and often experience life-changing injuries (e.g., skull fractures and internal injuries). Many, but not all fatal and serious injury crashes can be prevented by increasing motorist compliance with traffic signals.

Right Angle Collisions

The goal of the Program is to deter drivers from violating traffic signals, and thereby prevent serious crashes which are associated with red light running - specifically right angle

collisions. Right angle crashes are particularly dangerous because the sides of vehicles have relatively little space to absorb the force of impact and shield occupants, unlike the fronts and rears of vehicles, which have substantial crumple zones. In addition, a vehicle which is involved in this type of crash may spin out of control or roll over, leading to secondary impacts.

The Program has been effective at preventing right angle crashes. From 1991 through 1993, the three years before the Program began, there were approximately 7,221 reportable right angle crashes at signalized intersections annually in New York City. In the most recent three year period for which data is available, from 2012 through 2014, there were 62 percent fewer such crashes citywide, approximately 2,723 annually. In addition there was a 73 percent decline in severe injuries from right angle crashes at signalized intersections during these periods (from approximately 633 to 155 annually).

The following chart compares the number of right angle collisions which have occurred at camera enforced intersections during the year prior to when a red light camera’s installation, as compared to 2014, the most recent year of data available.

Right Angle Injury Collisions at Intersections with Red Light Camera Enforcement

	Bronx	Brooklyn	Manhattan	Queens	Staten Island	Citywide Total
Year Prior to RLC Installation at Intersection	42	157	12	127	29	367
2014	27	85	1	66	11	190
Change	-15	-72	-11	-61	-18	-177

Rear End Collisions

Drivers who do not expect traffic signals to be enforced are more likely to run red lights, and are also more likely to collide with a car in front of them which is complying with the law. Some studies which evaluate the initial period following camera installation find that rear end crashes may rise even as severe injuries fall, particularly in the weeks and months after camera enforcement commences at the site.

New York City’s experience does not indicate that red light cameras have led to an increase in rear end collision crashes. From 1991 through 1993, the three years before the Program began, there were approximately 7,348 reportable rear end collisions at signalized intersections annually in New York City. In the most recent three year period, from 2012 through 2014, there were 39 percent fewer reportable rear end collisions at signalized intersections citywide, approximately 4,464 annually. Most significantly, there was a 61 percent decrease in severe injuries during these periods (from approximately 341 to 134 annually).

The following table compares the number of rear end collisions which have occurred at camera enforced intersections during the year prior to each red light camera's installation, as compared to 2014, the most recent year for which data is available.

Rear End Collisions at Intersections with Red Light Camera Enforcement

	Bronx	Brooklyn	Manhattan	Queens	Staten Island	Citywide
Year Prior to RLC Installation at Intersection	56	298	36	249	78	717
2014	56	261	29	202	52	600
Change	0	-37	-7	-47	-26	-117

Severity of Injury Collisions & Injuries to Pedestrians, Bicyclists and Motorists

Red light cameras are not intended to prevent collisions unrelated to the violation of a traffic signal. Injuries sustained in traffic crashes unrelated to traffic signals, such as injuries sustained by pedestrians who are struck by turning vehicles, are not affected by red light cameras. Accordingly, much of the decline in severe injuries at intersections with red light cameras can be attributed to a reduction in severe injuries caused in right angle crashes.

The following table aggregates by borough the number and severity of injury collisions which occurred at camera enforced intersections during the year prior to each red light camera's installation as compared to 2014, the most recent year for which data is available.

Severity of Collisions at Intersections with Red Light Camera Enforcement

	Bronx	Brooklyn	Manhattan	Queens	Staten Island	Citywide
<u>Severe Injury</u> ⁷ Year Prior to RLC Installation at Intersection	20	47	8	45	12	132
2014	6	29	13	13	3	64
Change	-14	-18	5	-32	-9	-68

<u>Moderate Injury</u> ⁸ Year Prior to RLC Installation at Intersection	15	80	20	57	13	185
2014	7	57	17	62	6	149
Change	-8	-23	-3	5	7	-36

⁷ Injury severity classification is determined by NYS DMV and NYS DOT. Severe injuries include skull fractures, internal injuries, broken or distorted limbs, unconsciousness, severe lacerations, and unable to leave the scene without assistance.

⁸ Moderate injuries include visible injuries such as a "lump" on the head, abrasions, and minor lacerations.

<u>Slight Injury</u> ⁹ Year Prior to RLC Installation at Intersection	321	1239	107	970	201	2838
2014	206	1097	93	733	131	2260
Change	-115	-142	-14	-237	-70	-578

This table aggregates by borough the number of injury collisions to pedestrians, bicyclists and motorists at camera enforced intersections during the year prior to each red light camera's installation as compared to 2014, the most recent year for which data is available.

Injuries at Intersections with Red Light Camera Enforcement by Mode

	Bronx	Brooklyn	Manhattan	Queens	Staten Island	Citywide
<u>Pedestrian Injury Crashes</u> Year Prior to RLC Installation at Intersection	38	124	30	65	18	275
2014	31	122	26	66	11	256
Change	-7	-2	-4	1	-7	-19

	Bronx	Brooklyn	Manhattan	Queens	Staten Island	Citywide
<u>Bicyclist Injury Crashes</u> Year Prior to RLC Installation at Intersection	2	22	3	23	3	53
2014	4	25	12	10	1	52
Change	2	3	9	-13	-2	1

	Bronx	Brooklyn	Manhattan	Queens	Staten Island	Citywide
<u>Motorist Injury Crashes</u> Year Prior to RLC Installation at Intersection	310	1180	103	985	201	2779
2014	184	1036	85	731	128	2164
Change	-126	-144	-18	-254	-73	-615

Methodology for Crash Analysis

All data utilized for this analysis originates in motor vehicle accident reports compiled by police officers at crash scenes. The individual paper crash reports are sent by the New York Police Department to the NYS DMV and NYS DOT, who enter the information into electronic

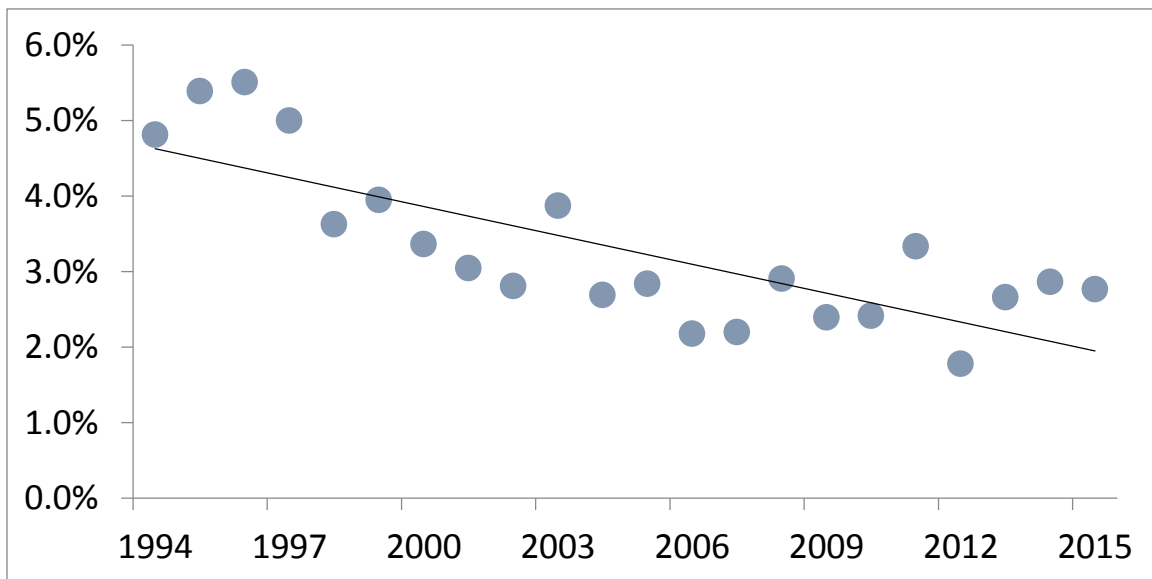
⁹ Slight injuries include hysteria, nausea, momentary unconsciousness, and complaint of pain without visible signs of injury.

databases, attribute locations to the crashes, categorize traffic injuries by severity and identify errors. This cleaned and categorized data is utilized by the City for planning and analysis purposes. The crash datasets are periodically reissued by the State as new methods of data collection and analysis are introduced. For example, the most recent year's data reflects a change in how crashes are assigned to intersections.

ADJUDICATION

Each NOL outlines how individuals may request a hearing by mail or in person to contest a violation they believe was issued in error. The rate of those hearing requests has declined over the years. For the first five years of the Program, approximately five percent of individuals who received an NOL requested a hearing to contest the violation. In 2015, less than three percent of individuals who received an NOL requested a hearing; the other 97 percent of individuals declined their opportunity for a hearing and agreed to pay the violation after the NOL was issued.

Percentage of individuals who request a hearing



Pursuant to Section 1111-a of the New York State Vehicle and Traffic Law and Section 19-210 of the New York City Administrative Code, the New York City Department of Finance (NYC DOF) is authorized to conduct hearings, either by mail or in person, in any of NYC DOF's five Borough Business Centers. Once the Administrative Law Judge (ALJ) determines the NOL presents a prima facie case, the ALJ will conduct a hearing on the merits of any defense presented. The ALJs review witness statements, as well as other types of documentary evidence, to afford the vehicle owner the opportunity to refute the prima facie case and establish a meritorious defense. ALJs are even permitted to consider hearsay evidence, and other evidence which may not be

admissible in a traditional court of law, in order to provide a vehicle owner with the opportunity to refute the NOL.

At hearing, approximately 91 percent of contested NOLs are upheld. In other words, in only nine percent of hearings is an NOL overturned by an ALJ –which represents less than 0.26 percent of all NOLs issued.

	Total	Percent of Total Violations Issued
Red Light Camera Violations Issued in 2015	555,025	100%
Red Light Camera Hearings Requested in 2015	15,346	2.8%
NOL Upheld at Hearing	13,912	2.5%
NOL Overturned at Hearing	1,434	0.26%

REVENUE AND EXPENSES

Red Light Camera Program (Inception-June 2015)

Program Costs	December 1993 to June 2015	\$170,664,537
Capital Costs	Inception to June 2015	\$30,440,691
DOT Staffing	December 1993 to June 2015	\$22,812,300
DOF Staffing	Inception to June 2015	\$7,158,914
Total Expenses	Inception to June 2015	\$231,076,441
Revenues	Inception to June 2015	\$482,837,418
Net Revenues	Inception to June 2015	\$251,760,977

	Active Cameras	Observed Events	Events/ Day	Events/ Week	Events/ Month	% Change in Events from previous year	Events / Camera / Day	# NOLs Issued	NOLs / Camera / Day	Hearing Requests	% of Hearings Guilty or Guilty with Reduction
1994	15	438,622	1201.7	8435	36552	NA	80.11	168,479	30.8	8,103	86%
1995	18	381,601	1046	7339	31800	-13	58.08	146,812	22.3	7,908	87%
1996	18	319,720	874	6149	26643	-16.22	48.53	140,751	21.4	7,748	89%
1997	18	258,424	708	4970	21535	-19.17	39.33	119,397	19.2	5,968	89%
1998	30*	417,747	1145	8034	34812	61.65	47.69	215,242	19.7	7,799	88%
1999	30	391,693	1073	7533	32641	-6.24	35.77	198,324	18.1	7,832	85%
2000	30	414,030	1131	7962	34503	5.7	37.71	207,260	18.9	6,967	84%
2001	50*	453,005	1241	8712	37750	9.41	42.5	226,642	21.3	6,898	84%
2002	50	492,678	1350	9475	41057	8.76	27.07	338,572	18.59	9,506	84%
2003	50	444,529	1218	8549	37044	-9.77	24.42	292,614	16.08	11,323	85%
2004	50	455,048	1243	8751	37921	2.37	24.93	325,024	17.81	8,739	85%
2005	50	409,489	1122	7875	34124	-10.01	22.58	306,117	16.82	8,690	86%
2006	100	554,846	1520	10670	46237	35.5	29.41	384,993	20.41	8,376	88%
2007	100	1,248,896	3422	24017	104075	125.09	34.53	947,341	26.19	20,813	92%
2008	100	1,094,847	2991	21055	91237	-12.33	29.91	791,734	21.63	22,990	92%
2009	121	1,057,463	2897	20336	88122	-3.41	23.91	745,241	16.85	17,824	92%
2010	169	1,455,540	3988	27991.2	121295	37.64	23.62	1,053,268	17.08	25,414	96%
2011	188	1,167,969	3200	22461	97331	-19.76	17.49	821,483	12.3	27,376	94%
2012	186	908,801	2483	17477	75733	-22.1	13.37	634,088	9.33	11,266	94%
2013	187	839,881	2301	16152	69990	-7.58	12.49	583,778	8.68	15,531	89%
2014	181	802,351	2198	15430	66863	-4.5	12.14	579,308	8.77	16,596	88%
2015	196	678,020	1858	13,039	56,502	-15%	15.2	555,025	7.76	15,346	91%