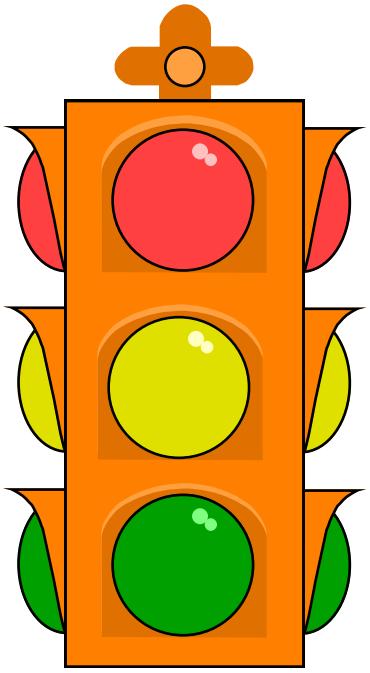


NEW YORK CITY

RED LIGHT CAMERA PROGRAM

PROGRAM REVIEW 1994 – 2010

2011 REPORT

New York City
Department of Transportation
55 Water Street
New York, NY 10013

OVERVIEW

New York City's "Red Light Camera Program" (the "Program") has played a central role in the City's efforts to enhance public safety. In its seventeen year history, the Program has proven to be an enormously effective traffic safety measure that prevents injuries and the loss of life resulting from accidents caused by red light running. Since its inception, over 6 million vehicles have been cited for going through red lights by these traffic-control signal photo violation-monitoring devices. In 2010 alone, 1,053,268 violations or Notices of Liability ("NOLs") were issued to violators. These violations are committed by passenger vehicles, buses and taxicabs running through red lights. However, the extended use of these devices has been shown to dramatically reduce the number of such violations at the intersections being monitored. NOLs have declined by as much as 40% to 60% at intersections where red light cameras have been installed. An NOL, the equivalent of a parking ticket, charges the vehicle owner with a fine, but points are not assessed against their driver's license.

Since the Program's implementation, the New York City Department of Transportation has found that red light cameras have had a demonstrable affect upon driver behavior. This correlates with studies conducted by the Insurance Institute for Highway Safety (the "Institute") a well-recognized, nonprofit, scientific and educational organization dedicated to reducing the losses from crashes on the nation's highways. According to a May 2008 report, a recent Institute review of red light camera studies around the world, including several by the Institute, concluded that cameras reduce red light violations by 40-50 percent. These findings are consistent with a 2002 study conducted by Mitretek Systems (*Using Meta Analysis Techniques to Assess the Safety Effects of Red Light Running Cameras*).

In New York City, a large number of the traffic accidents resulting in bodily injury and death to motorists, passengers, pedestrians and bicyclists are due to the failure of motorists to obey traffic-control signals located at intersections. "Right angle" and pedestrian accidents attributed to red light running are among the leading causes of traffic fatalities on the City's streets.

The effectiveness of red light cameras in reducing the number of accidents and related injuries was highlighted in another study conducted by the Institute. In its report, the Institute reported a 32% decrease in front-into-side crashes (the type of crash most closely associated with red light running) after the introduction of red light cameras (as reported in its 4/28/01 Status Report). Further, this same report found a 68% reduction in the number of front-into-side crashes involving injuries after red light cameras were introduced.

OVERVIEW

In 1988, the New York State Legislature first enacted legislation that allowed cities with a population of one million or more to establish a demonstration program to install photo violation-monitoring devices to record vehicles going through red light signals at traffic intersections. The State Legislature has since extended the duration of the demonstration program five times: in 1991, 1993, 1995, 1999, 2004 and 2009.

In 1995, the Program was also expanded to increase to fifty the number of intersections where such cities were authorized to install and operate traffic-control signal photo-monitoring devices. In 2009, legislation was passed increasing the number of intersections allowed to be equipped with Red Light Cameras from 100 to 150. The law became effective in late May 2009 and the agency began installing additional locations beginning in July 2009. By December 2009, we reached 150 intersections. In 2010, the agency installed an addition 20 Red Light Cameras at locations where Red Light Cameras currently exist. (The new cameras were placed on second approaches at those intersections.) Therefore the total number of cameras was increased to 170. However, at no time was the legislative restriction of 150 intersections exceeded.

New York City's Red Light Camera Program has proven to be a valuable instrument in the City's ongoing effort to enhance the overall safety of its roadways for motorists, passengers, pedestrians and bicyclists alike. The success of the Program in enhancing public safety throughout the five boroughs has led to the City's continued interest in expanding the Program. While the Program has been very effective in reducing unsafe driving on the City's streets, the current limitation of 150 intersections, far less than even 1% of all the City's signalized intersections, prevents the New York City Department of Transportation from implementing a broader (and much needed) application of this important public safety initiative. By further increasing the limit on the total number of red light cameras allowable, the City will be able to install this successful accident reduction tool at many more high accident locations.

HOW THE PROGRAM WORKS

Traffic signals control more than 12,450 intersections throughout New York City. Red light cameras are currently installed at 150 of these intersections and are each positioned to capture only one direction of travel at the intersection. At 20 of these intersections we have a second camera for another travel direction. The total number of cameras that we currently operate is 170. The cameras, which photograph the rear of the vehicle, are situated approximately fifty to one hundred feet back from the stop-line. This results in a photo which shows the vehicle, the intersection, and the traffic signal all in one frame. In 2004, the program was upgraded so that all intersections had "digital" cameras as opposed to traditional "wet" film. This reduced processing time and improved the issuance of the violations.

When a vehicle runs through a red light, sensors (magnetic induction loops and piezo tubes) embedded in the roadway trigger the camera which takes a sequence of photographs of the rear of the car. The initial photos show the vehicle before the stop-bar and the subsequent photos show the vehicle passed the stop-bar. The traffic signal displaying a red light is shown in each photo. The cameras are operational at all times: 7 days per week, 24 hours per day. The NOLs are issued to the registered owner of the vehicle. An NOL, the equivalent of a parking ticket, charges the vehicle owner with a fine, but points are not assessed against their driver's license. The current red light camera fine is $50 with a $25 late fee. Other States such as California, Oregon, Pennsylvania, Illinois and Maryland charge more than $100 per ticket.

City employees are responsible for reviewing the film and certifying tickets, staffing the Help Center and providing adjudication. The contractor for the Program provides the following: cameras, maintenance of the cameras, digital disk retrieval, CD ROM's, film, computer software and hardware, local area network, wide area network, data processing and ad hoc reporting.

THE PROCESSING STEPS

The contractor's technician visits each red light camera on a nightly basis to perform maintenance and retrieve the CD ROM. The CD ROMs are brought to a lab for development and quality control inspection. The CD ROMs are then delivered to a New York City Department of Transportation image review team located in Queens. Here specially trained City Review Technicians review each and every photo. The technicians determine if the photos provide adequate evidence to issue an NOL.

Upon identifying a pair of photos clearly depicting a vehicle passing through a red light, a technician will enlarge the first photo in order to make the license plate clearly legible. 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 cross walk while the traffic signal is still red, and the clear and readable enlargement of the vehicle's license plate.

Each week the license plates are sent on a tape to the New York State Department of Motor Vehicles (DMV) in Albany. One week later, DMV returns the tape to which DMV has added the vehicle registration (not driver information) and a description of the vehicle for each license plate. This information becomes the violation record which will be indexed to the corresponding three photos.

The photos that become NOLs are captured, compressed and stored in a computer system in an on-line storage array. Immediately after this capture, all three photos are printed onto an official NOL letter that will then be mailed to the registered owner at the address indicated by DMV.

The use of the on-line storage array allows the photos, the actual evidence, to be accessed and viewed in a real-time manner via computer by the New York City Department of Finance's Administrative Law Judges, Help Desk attendants and cashiers located in the various boroughs. This feature greatly improves the efficiency of the hearings and appeals process and greatly reduces the handling of paper copies of the NOLs.

PROGRAM STATISTICS FOR 1994 - 2010

The table on the following page represents data collected during the Red Light Camera Program's seventeen year history. Although the raw data shows an overall increase in the Number of Events (an Event is a pair of photographs representing a possible red light violation) and NOLs issued over the course of the Program, a more accurate statistical representation (achieved by taking into account increases in the number of red light cameras) demonstrates a strong downward trend in the average Number of Events captured and NOLs issued. This data indicates that the Program has enhanced public safety by serving as an effective deterrent to red light running.

The overall increase in the Number of Events captured and NOLs issued evident in the raw data in 1998 and in 2001 are as a result of the Program's expansion from 18 to 30 cameras and from 30 to 50 cameras in those respective years. In addition, the advent of digital technology in 2001, along with having a total of 50 cameras for entire calendar years also added to the subsequent increase in the Number of Events captured and NOLs issued. Similar results were found in 2006/2007 when the program was expanded from 50 to 100 locations, and additional locations were equipped for red light cameras. In 2010, the program was expanded to incorporate 170 cameras at 150 intersections.

However, an accurate representation of the impact of these cameras is achieved when the raw data is averaged out over the increased number of red light cameras. These statistics show that, over the course of the program while the number of cameras in operation (and the Number of Events and NOLs) increased and while there have been advances in technology, there has been a dramatic decrease in the Number of Events Per Camera and NOLs Per Camera.

An analysis of the Events Per Camera Per Day over the first twelve years of the Program shows a dramatic 72% decline in Events from 80.11 in 1994 to 22.58 in 2005. In addition, an analysis of NOLs Per Camera Per Day shows an approximate 45% decline from 30.80 in 1994 to 16.82 in 2005. In 2008, the number of events and NOLs per camera decreased from 34.53 to 29.91 and 26.19 and 21.63 respectively per location. Experience has shown that when new locations are brought "on-line", as in 1998, 2001 and 2007, they have a tendency to raise the overall statistics as these are usually locations with a much higher rate of red light running than those that have been equipped for several years. As time goes on, the numbers of NOLs at these newly equipped locations will drop and result in overall lower events and NOLs Per Day.

These statistics evidence an increasing reluctance by motorists to risk running a red light and is a further testament to the success of the Program as a means of changing motorist behavior in order to enhance overall safety.

Program Statistics 1994- 2010

	‘94	‘95	‘96	‘97	‘98	‘99	‘00	‘01	‘02	‘03	‘04	‘05	06	07	08	09	‘10
Active Cameras	15	18	18	18	30	30	30	50	50	50	50	50	100	100	100	121*	169*
# Events Captured	438,622	381,601	319,720	258,424	417,747	391,693	414,030	453,005	492,678	444,529	455,048	409,489	554,846	1,248,896	1,094,847	1,057,463	1,455,540
# NOLs Issued	168,479	146,812	140,751	119,397	215,242	198,324	207,260	226,642	338,572	292,614	325,024	306,117	384,993	947,341	791,734	745,241	1,053,268
% Change in Events	NA	-13.00%	-16.20%	-19.20%	61.70%	-6.20%	5.70%	9.40%	8.80%	-9.80%	2.40%	-10.00%	35.5	125%	-16.42	-5.87	37.6%
Events/ Camera/ Day	80.11	58.08	48.53	39.33	47.69	35.77	37.71	42.5	27.07	24.42	24.93	22.58	29.41	34.53	29.91	23.91	23.62
NOLs/ Camera/ Day	30.8	22.3	21.4	19.2	19.7	18.1	18.9	21.3	18.59	16.08	17.81	16.82	20.41	26.19	21.63	16.85	17.08
# Appealed	8,103	7,908	7,748	5,968	7,799	7,832	6,967	6,898	9,506	11,323	8,739	8,690	8,376	20,813	22,990	17,824	25,414
% Guilty	86%	87%	89%	89%	88%	85%	84%	84%	84%	85%	85%	86%	88%	92.05%	92.40%	91.92%	96.49%

NUMBER OF EVENTS

When a vehicle enters an intersection after the traffic signal turns red, and after a grace period of three-tenths of a second, the in-pavement electronics associated with the camera sends a pulse back to the camera to take a sequence of photos. The first photo selected will establish whether or not the vehicle in question had entered the intersection legally prior to the signal turning red. In New York City a vehicle may enter an intersection on amber and proceed through legally. Entering on red is a violation.

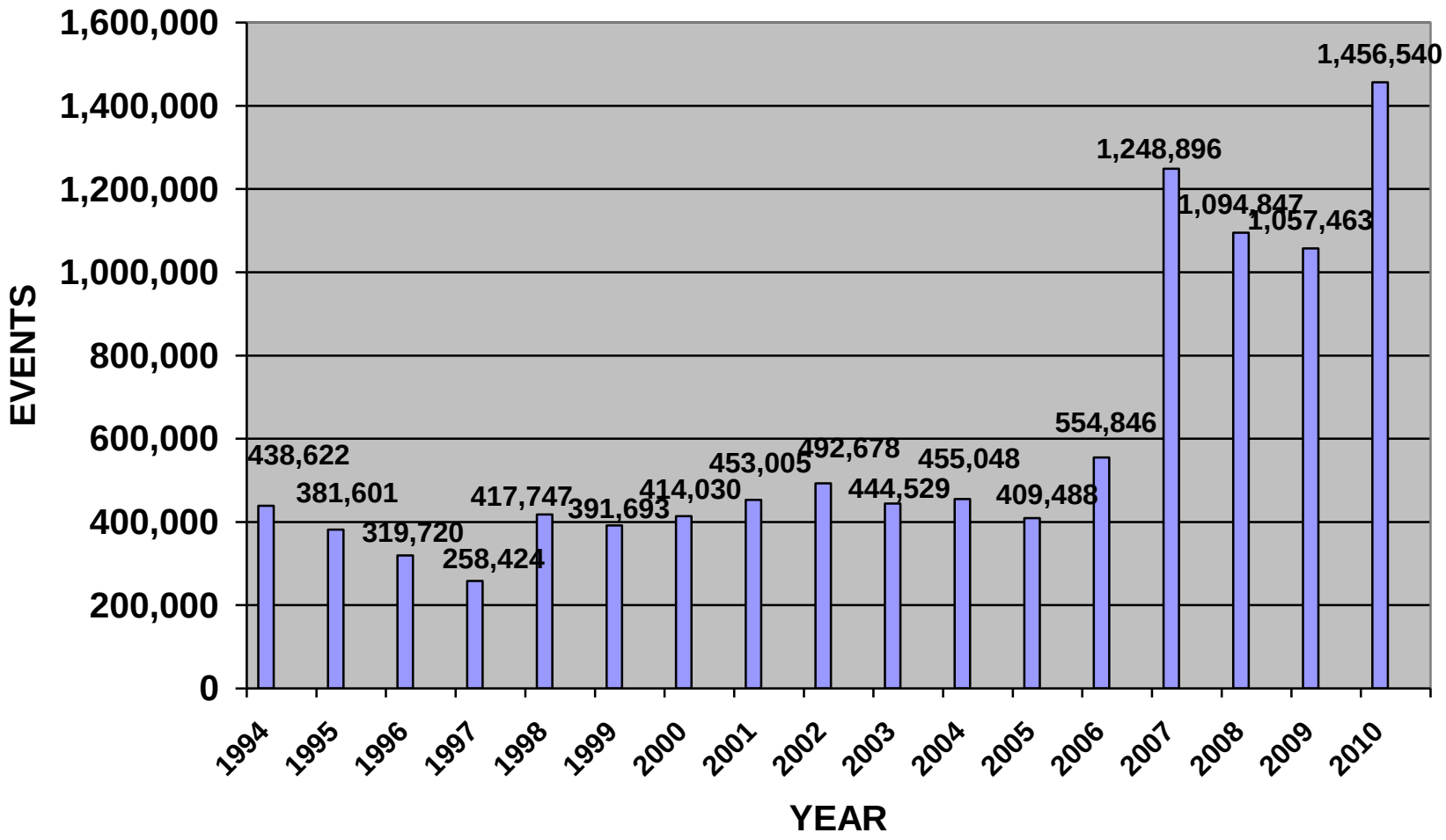
The second photo selected establishes whether the driver continued through the red light. These two photos make up an event (an Event). A 100 percent "hit rate" would mean that every set of photographs generates an NOL. Events have two possible outcomes, either they become an NOL or an exception. An exception is one of many reasons for not issuing an NOL to the registered owner of the vehicle. For example, the vehicle was a police or other emergency vehicle, a vehicle obstruction, weather (snow/rain), unreadable plates, etc.

Events are the true measure of the worth of the Red Light Camera Program as it relates to public safety. The purpose of the Program is to reduce the number of possible occurrences for accidents to happen. Therefore, as the Number of Events go down, the Program is achieving its goal, that is reducing accidents and saving lives.

The following graph shows the Number of Events Per Year since the Program's inception. The spike in 1998 represents the addition of 12 more cameras (to 30) into the Program, and again in 2001 when the number was increased to 50 cameras, the maximum number allowed by law at the time, and again in 2002 the first full year of the 50 camera increase. Also, contributing to the spikes in 2001 and 2002 was the introduction of digital cameras.

In 2010 the Number of Events increased in comparison to the previous year. This was an expected result and consistent with previous years as more camera locations were installed.

EVENTS PER YEAR



In 2010 the Program was expanded to 170 cameras at 150 intersections

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EVENTS BY VIOLATION DATE

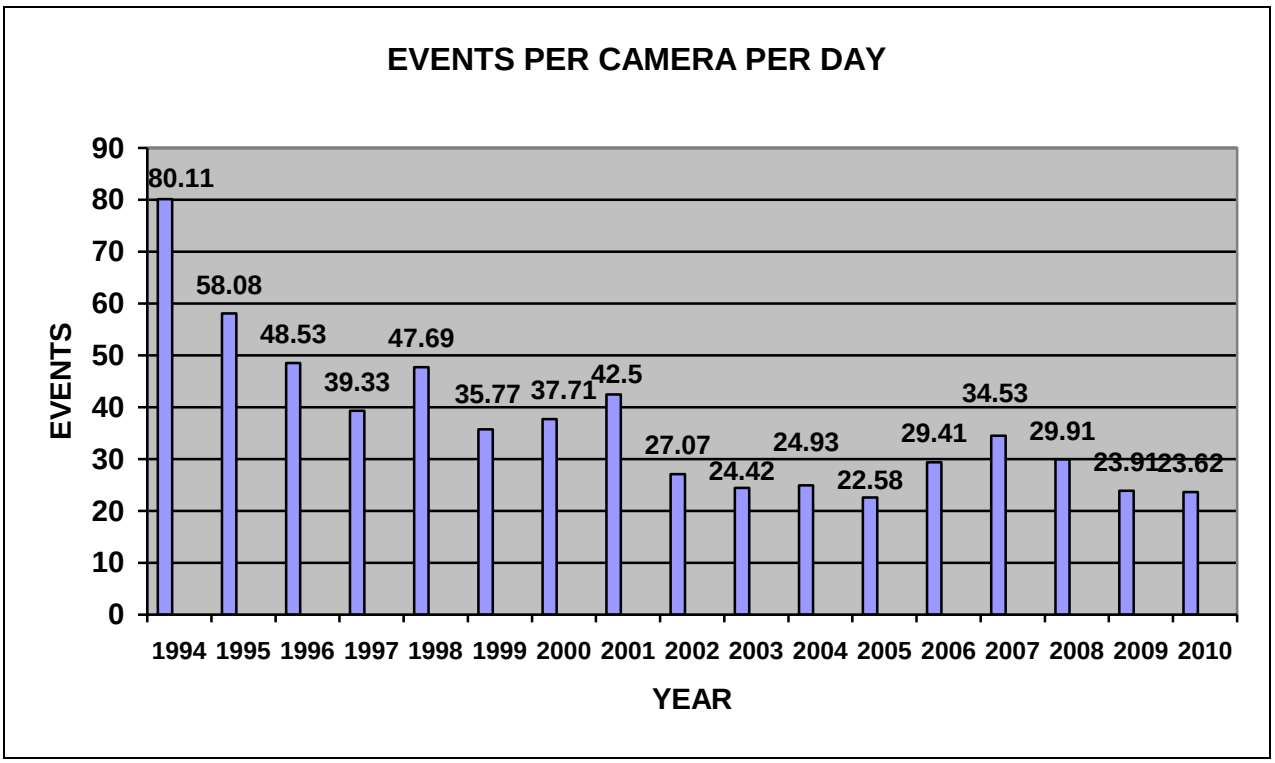
	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1993												40,070	40,070
1994	42,524	36,346	40,283	38,219	40,399	40,850	38,158	35,734	29,086	33,234	31,951	31,838	438,622
1995	32,110	28,698	31,118	32,461	32,918	34,325	34,906	36,165	32,551	30,326	26,601	29,422	381,601
1996	27,362	25,678	28,638	29,337	33,590	29,252	28,324	28,448	24,426	26,124	21,071	17,470	319,720
1997	15,373	14,274	18,490	17,034	20,787	27,486	27,350	23,575	27,064	23,798	20,712	22,481	258,424
1998	22,958	24,016	33,555	31,627	33,110	29,840	42,941	45,112	38,894	42,185	36,215	37,294	417,747
1999	33,821	30,522	32,414	33,141	35,623	35,480	32,289	31,674	32,006	32,663	28,877	33,183	391,693
2000	28,372	26,680	34,101	30,646	37,432	43,229	38,710	40,823	38,878	37,148	29,137	28,874	414,030
2001	27,432	23,813	26,067	27,748	31,428	42,491	40,409	48,799	44,917	48,195	45,764	45,942	453,005
2002	42,583	38,690	45,683	42,414	48,221	48,335	44,491	42,298	38,592	36,277	32,228	32,866	492,678
2003	29,033	27,872	37,037	38,870	42,172	40,601	43,508	36,993	36,822	45,818	33,896	31,907	444,529
2004	29,763	28,706	36,462	39,830	44,483	48,101	44,370	36,623	43,013	40,770	33,233	29,694	455,048
2005	25,297	24,219	27,742	32,655	37,290	41,751	38,542	38,075	39,433	36,251	34,540	33,694	409,488
2006	29,736	31,129	36,756	41,252	47,287	44,039	43,999	49,094	45,668	63,912	56,535	65,429	554,846
2007	74,826	71,206	99,036	98,758	118,203	120,075	114,711	118,168	124,210	112,137	100,359	97,207	1,248,896
2008	77,230	76,294	92,008	97,959	107,204	110,627	106,122	107,182	85,801	84,261	75,778	74,372	1,094,838
2009	65,207	61,575	70,549	74,461	83,699	85,733	90,825	103,284	101,645	105,342	100,895	114,203	1,057,418
2010	105,514	93,600	122,717	129,691	130,567	141,468	139,230	138,675	126,971	120,201	107,987	99,919	1,456,540
TOTAL	709,141	663,318	812,656	836,103	924,413	963,683	948,885	960722	909,977	918,642	815,779	865,865	9,029,184
AVERAGE	41,714	39,018	43,121	47,803	54,377	56,687	56,513	56,513	53,528	54,037	47,987	50,933	531,128

NUMBER OF EVENTS PER CAMERA PER DAY

New York City's Red Light Camera Program has proven to be a valuable instrument in the City's ongoing effort to enhance the overall safety of its roadways for motorists, passengers, pedestrians and bicyclists alike. Since its implementation, the number of red light violators has significantly decreased at each intersection where a photo-monitoring device has been installed.

The graph below depicts the Number of Events Per Camera Per Day. Unlike the previous chart, it shows that much of the increase in the number of daily events in 1998 and 2001 was due to the addition of 12 cameras and 20 cameras in those years, respectively. Overall, this graph demonstrates a significant drop in the Number of Events Per Camera over the course of the Program. Thus, it depicts a more accurate representation of how well the Program is working. The Number of Events went down from 80.11 to 22.58 (a decrease of 72%) over the course of the Program's first twelve year period which signifies that, although more drivers are being caught because there are more cameras, there are actually fewer violations per location per day.

In 2010 the Number of Events per Camera per Day decreased from 23.91 to 23.62.



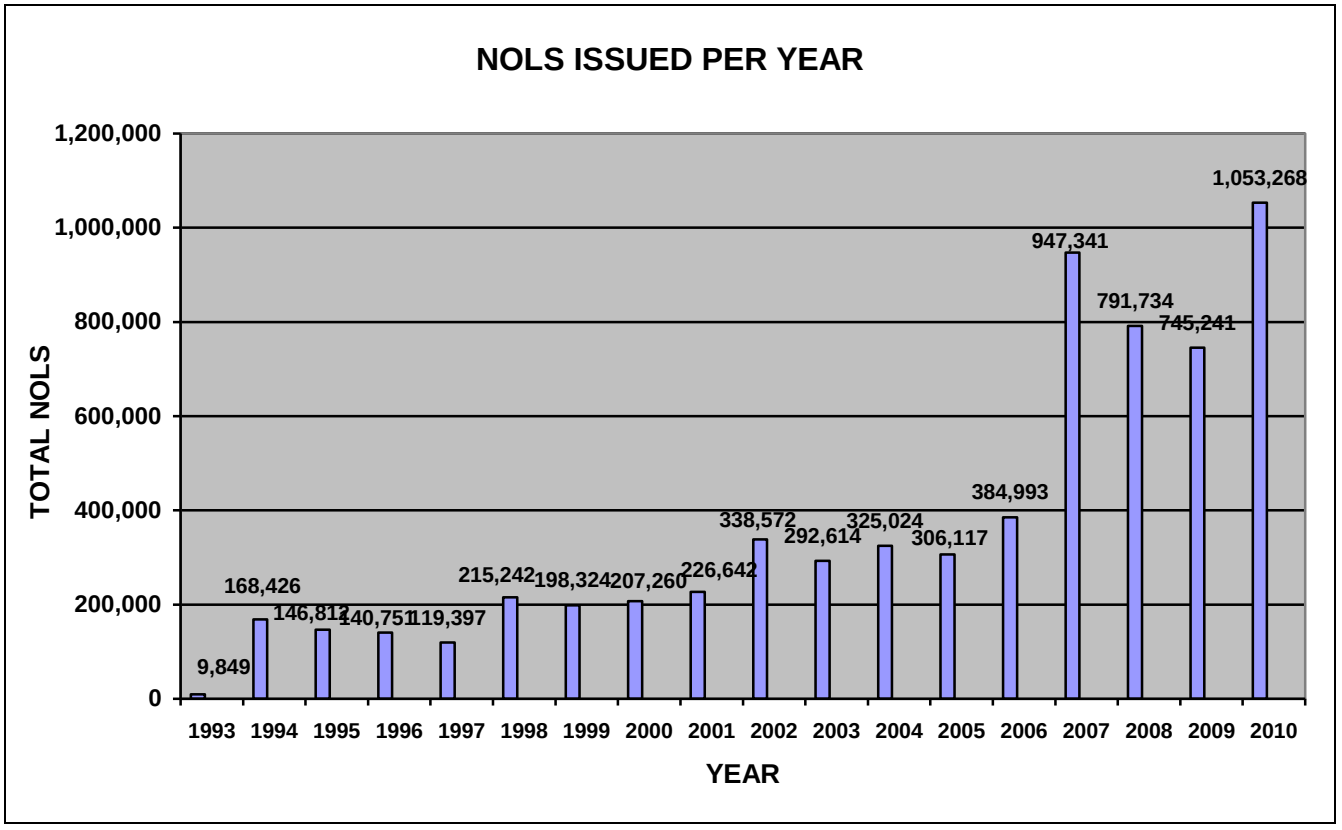
NUMBER OF NOLS ISSUED PER YEAR

The Program has proven to be an effective traffic safety measure by preventing injuries and the loss of life due to accidents caused by red light running.

The graph below represents the total Number of NOLs Issued per Year during the Program's seventeen year history. The trend from 1994 to 1997 was downward. As the number of cameras during this period remained constant at 30, a deterrent effect is clearly shown. The extended use of these devices, shows a reduction in the number of violations at the intersections being monitored.

As previously stated, the increase from 1998 to 2002 is due to the increase in the number of cameras in 1998 and 2001, as well as technological changes to the Program (i.e. introduction of digital cameras). From 2004 to 2005, there was a 5.8% decrease in the number of NOLs issued, again a deterrent effect is shown.

In 2010 the number of NOLs per year increased from 745,241 to 1,053,268. This was an expected result and consistent with previous years as more cameras were added.



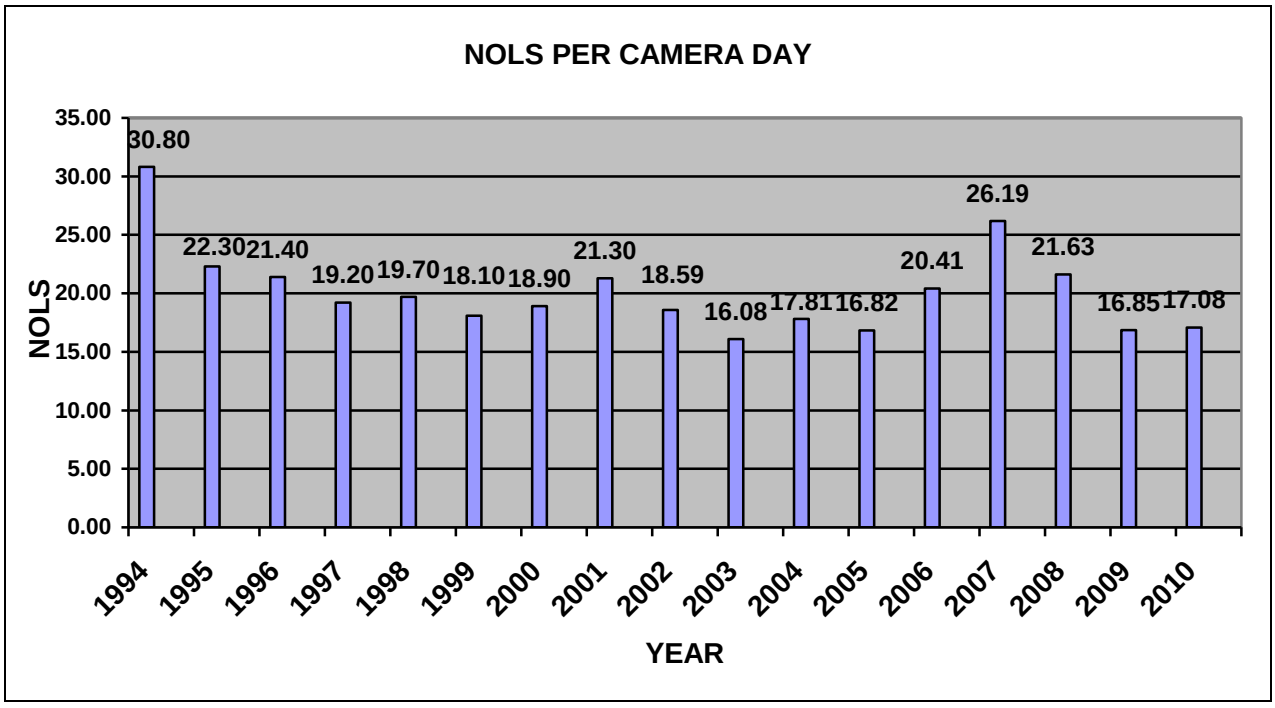
NUMBER OF NOLS ISSUED PER CAMERA PER DAY

As with the data representing the yearly change in the Number of Events over the course of the Program, the true value of the Program as a means of changing motorist behavior in order to enhance overall safety is best illustrated by showing an average breakdown of NOLs Issued Per Camera Per Day.

Unlike the previous chart showing a raw increase in the number of NOLs issued over the course of the Program, the chart below indicates a very strong downward trend when the number of NOLs is averaged by the number of red light cameras in operation. When taking into consideration the years that additional cameras were introduced into the Program (1998, 2001 and 2006) the data shows an overall decrease in the Number of NOLs Per Camera.

Moreover, this decease would have been even more dramatic had the improved accuracy due to the introduction of digital technology not been introduced in 2001. This data suggests an increasing reluctance by motorists to risk running a red light and is further testament to the success of the Program.

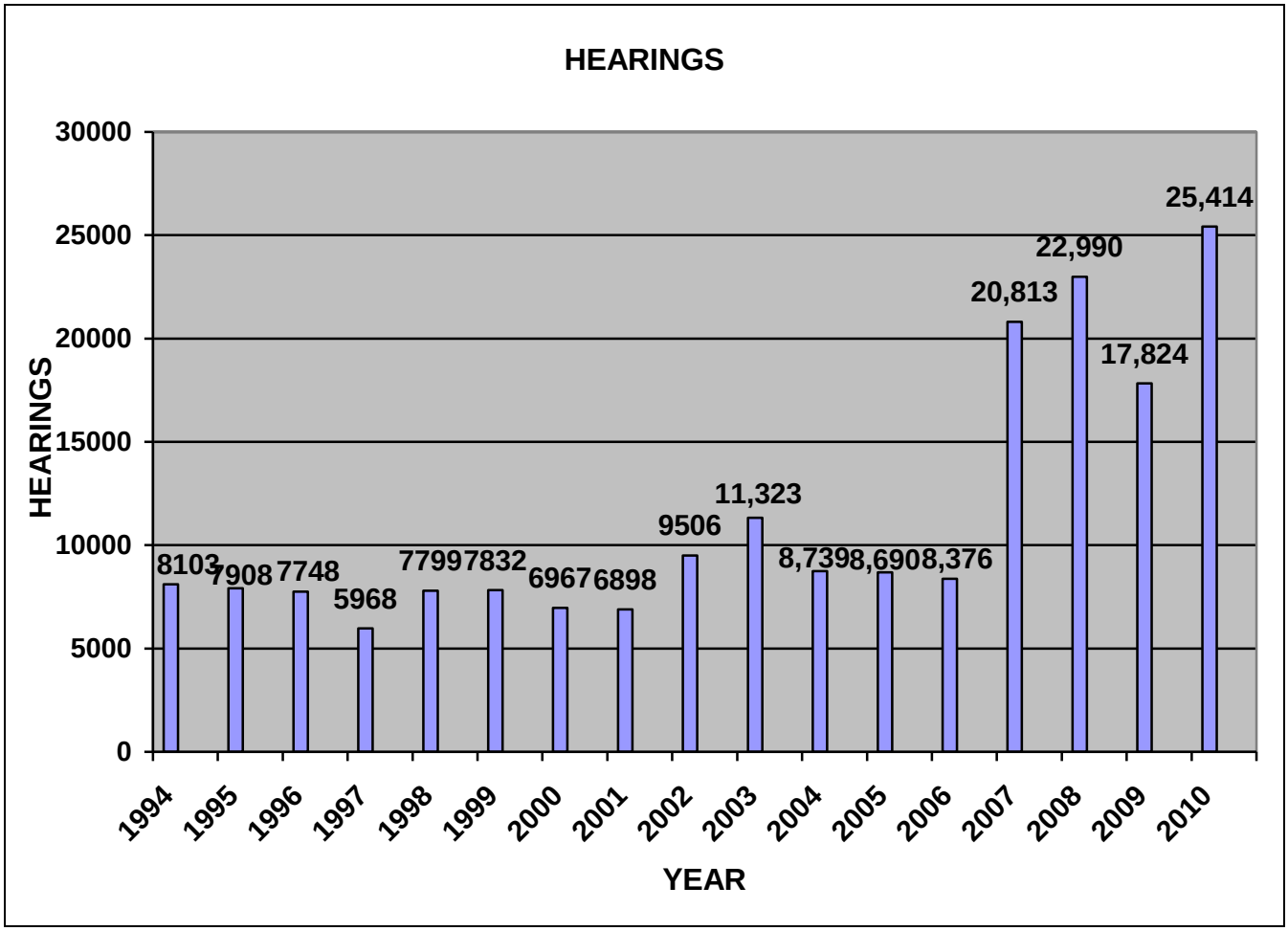
In 2010 the Number of NOLs per Camera per Day increased in comparison to the previous year. This was an expected result and consistent with previous years.



ADJUDICATION

The graph below and on the following page further attests to the quality of the Program. An individual who receives an NOL has the right to appeal the violation. Over the first four years, approximately 5% of those individuals receiving an NOL requested a hearing to contest the violation. Over the next five years this number dropped to approximately 3%. While the number of requested hearings increased during the three year period from 2001 to 2003, the percentage of those receiving an NOL remained consistent during this period at 3%.

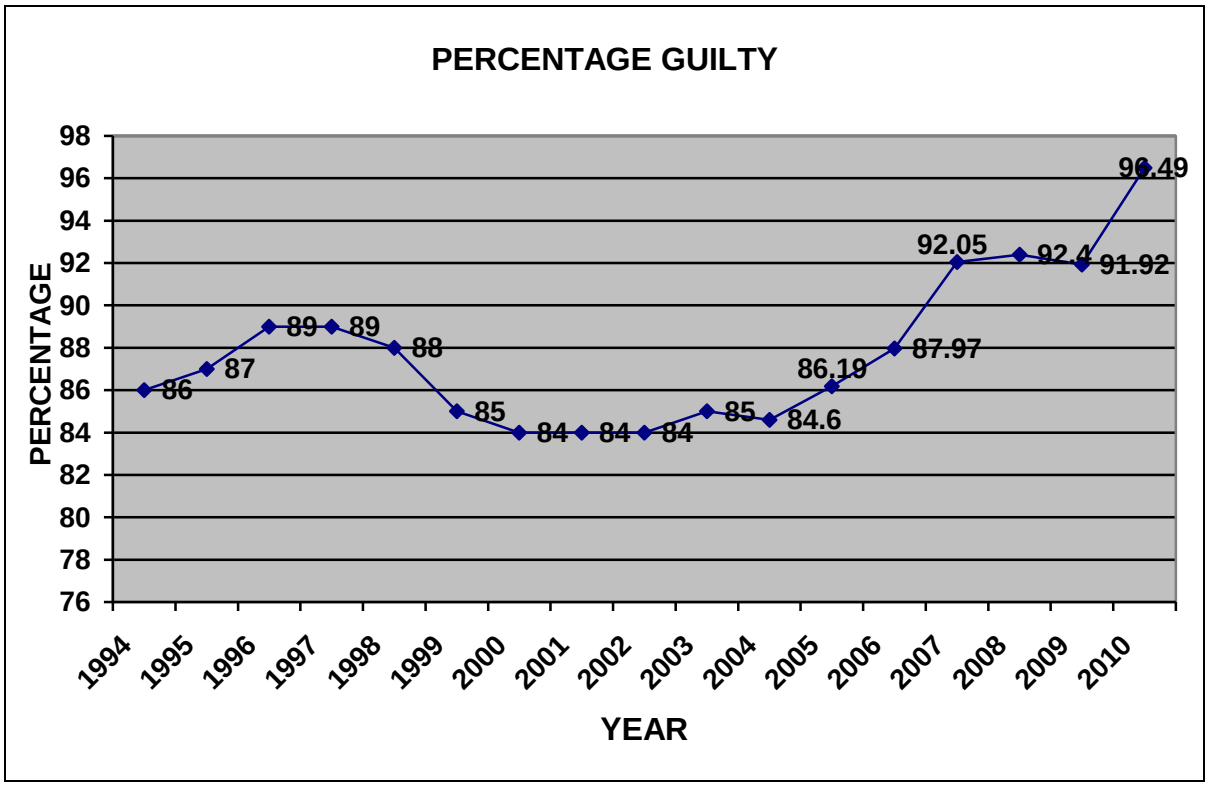
The City's Department of Finance employs Administrative Law Judges to review cases, either by mail (individual mails in letter contesting the ticket) or in person at a Hearing Center. The evidence is usually overwhelming and a guilty verdict is typically upheld.



ADJUDICATION

The graph below represents those individuals who appealed. In 2010, only 2.4% of the individuals who received an NOL requested a hearing. Of this percentage, 96% were found not to have any substantive evidence to overturn the issuance of the NOL they received. In other words, only 4% of the 2.4% who had asked for a hearing had legitimate pleas that resulted in the dismissal of the NOL.

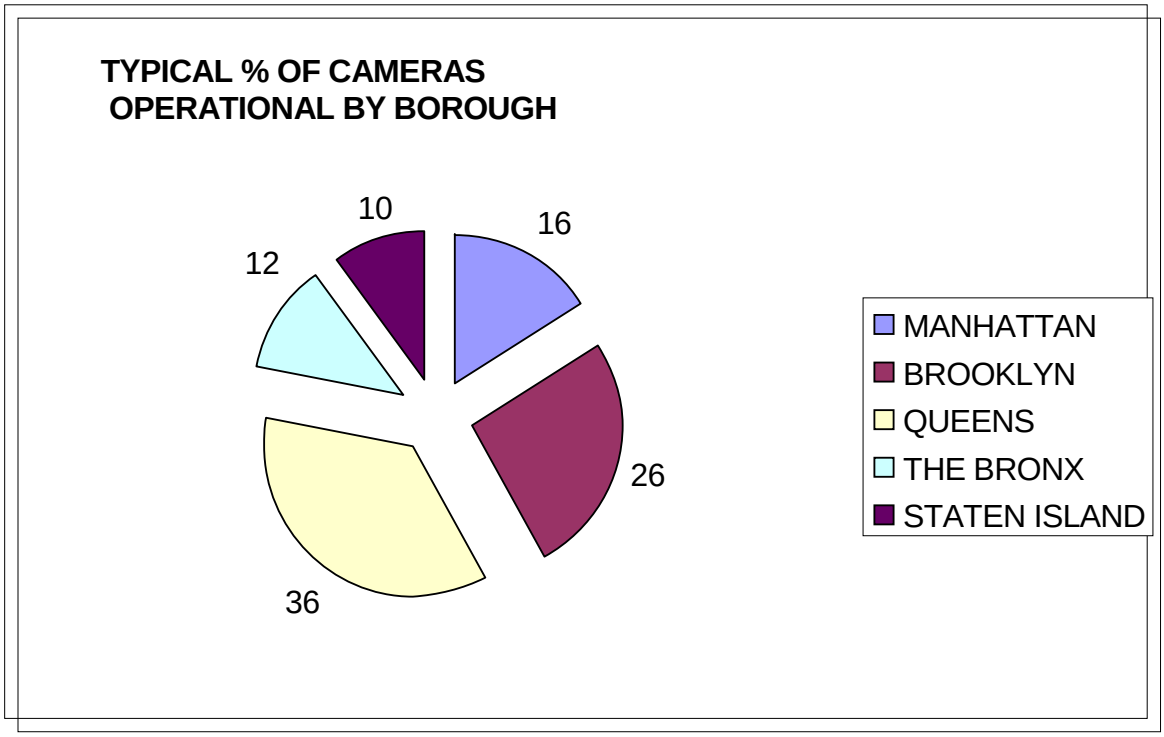
These statistics attest to the quality and integrity of the Program. Both the number of hearings and the low percentage of NOLs successfully appealed contribute to a change in driver behavior -- red light runners are on notice that they will be caught in the act, will be fined and will have difficulty getting their NOL dismissed.



CAMERA LOCATIONS BY BOROUGH

Since its inception in December of 1993, the Program has grown to include 175 cameras located at key intersections throughout the City's five boroughs and grew again in 2009 to include 150 active intersections. Locations are selected based upon a review of several factors including; accident history of the intersection, engineering judgment and community and elected official requests.

The chart below depicts the number of red light cameras operational today by Borough. The City has over 195 locations instrumented for cameras, with only 175 operational at any one time. The actual break down by borough varies by day and is dependant on maintenance, construction in the area and other concerns. In addition, as a further deterrent, 200 dummy cameras (non-functional shells) have also been installed throughout the City's five boroughs.



BEFORE AND AFTER STUDY OF RED LIGHT CAMERA LOCATIONS INSTALLED BETWEEN 08/01/06 AND 9/8/07

BOROUGH	#OF CAMERAS	BEFORE INST. DATE INJURY	AFTER INST. DATE INJURY	CHANGE
BRONX	13	53	32	-21
KINGS	20	83	84	1
MANHATTAN	14	40	35	-5
QUEENS	26	93	79	-14
RICHMOND	9	14	9	-5
TOTAL	82	283	239	-44

BOROUGH	#OF CAMERAS	BEFORE INST. DATE PED INJURY	AFTER INST. DATE PED INJURY	CHANGE	BEFORE INST. DATE BIKE INJURY	AFTER INST. DATE BIKE INJURY	CHANGE	BEFORE INST. DATE MOTORIST INJURY	AFTER INST. DATE MOTORIST INJURY
BRONX	13	6	5	-1	1	0	-1	46	27
KINGS	20	3	5	2	1	1	0	79	78
MANHATTAN	14	14	7	-7	2	1	-1	24	27
QUEENS	26	8	1	-7	0	2	2	85	76
RICHMOND	9	1	0	-1	1	0	-1	12	9
TOTAL	82	32	18	-14	5	4	-1	246	217

SEVERITY OF INJURIES

BOROUGH	#OF CAMERAS	BEFORE INST. DATE INJURY	AFTER INST. DATE INJURY	CHANGE	BEFORE INST. DATE TYPE A & TYPE B	AFTER INST. DATE TYPE A & TYPE B	CHANGE	BEFORE INST. DATE TYPE C	AFTER INST. DATE TYPE C
BRONX	13	53	32	-21	7	2	-5	46	30
KINGS	20	83	84	1	9	4	-5	74	80
MANHATTAN	14	40	35	-5	10	6	-4	30	29
QUEENS	26	93	79	-14	14	6	-8	79	73
RICHMOND	9	14	9	-5	1	0	-1	13	9
TOTAL	82	283	239	-44	41	18	-23	242	221

Note: The "Before" and "After" analyses is based on the crashes that occurred at the camera equipped approaches for the 82 intersections installed between 8/1/06 and 9/8/07.

Summary Findings:

After the installation of the 82 cameras, there has been:

1) **A 16 % decrease in all injuries.**
2) **A 44% decrease in pedestrian injuries**
3) **A 20 % decrease in bicyclist injuries**
4) **A 56% decrease in Type A and Type B injuries**
5) **A 9% decrease in Type C injuries.**

Definition of injury Types:

"A" Severe injuries include skull fractures, internal injuries, broken or distorted limbs, unconsciousness, severe lacerations, and unable to leave the scene without assistance.

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

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

REVENUE AND EXPENSES

Red Light Camera Program Since Inception (December 1993 - June 2011)

REVENUE VS. EXPENSES

Contracts	December 1993 - June 2011	$ 136,988,584
Capital Costs	Inception - June 2011	$ 18,421,659
DOT Staffing	December 1993 - June 2011	$ 18,556,961
DOF Staffing	July 1996 - June 2011	$ 5,817,793
		$ 24,374,755
Total Expenses	Inception - June 2011	$ 179,784,997
Revenues	Inception - June 2011	$ 342,894,064
Net Revenues	Inception - June 2011	$ 163,109,067