



# **New York City Red Light Camera Program**

Program  
Review 1994-2014

2015 Report



## EXECUTIVE SUMMARY

In 1988, the New York State Legislature and Governor enacted Vehicle and Traffic Law §1111-a, which granted New York City 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 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 events observed at each camera location has declined by 85 percent, and the average daily number of red light running violations issued at each camera location has declined by 71 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 59 percent citywide, from 7,221 to 2,927 annually. In addition severe injuries from such crashes have declined by 73 percent, from 633 to 174 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 36 percent citywide, from 7,348 annually to 4,695 annually. In addition severe injuries from such crashes have declined by 60 percent, from 341 to 137 annually.

The Red Light Camera 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

An analysis of 2009 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.<sup>1</sup> 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 safely, more than 42 percent of drivers admitted doing so within the previous month.<sup>2</sup> A recent

---

<sup>1</sup> 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

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

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.<sup>3</sup>

## **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.<sup>4</sup> In addition, distracted drivers make fewer glances to traffic lights, and some drivers fail to even look at traffic signals.<sup>5</sup>

## **IMPROVING SAFETY AT INTERSECTIONS**

From 2012-2014 in New York City, 51 percent of fatal traffic crashes occurred at intersections. NYC DOT takes a number of steps to promote safety at intersections, in addition to the red light camera 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.<sup>6</sup> An analysis of intersection crashes in four states found that right-turn-on-red crashes frequently involved pedestrians and bicyclists, and 93 percent of these crashes resulted in injuries to the pedestrians and bicyclists.

### Improved Signal Visibility

Signal head visibility can be improved 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

---

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

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

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

<sup>6</sup> 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

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 phase. An all-red phase does not increase or reduce the likelihood of red light running.

## **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**

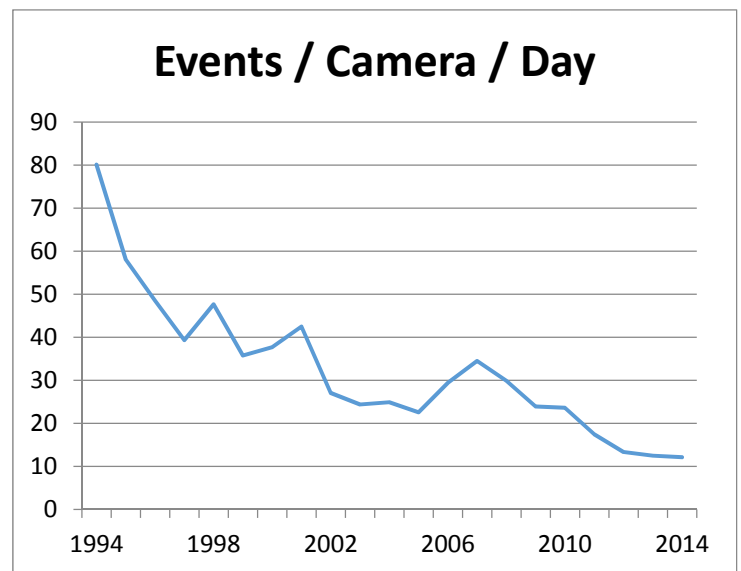
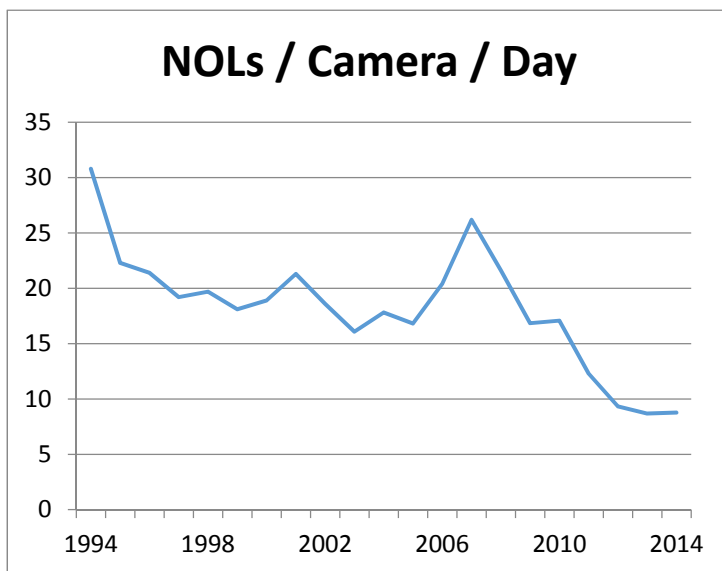
The purpose of the Program is to deter motorists from running red lights. Accordingly, the more successful the Program is, the fewer red light violations we should observe over time.

The number of average red light running events captured on each camera on a daily basis has dropped by 85 percent from 80.1 in 1994 to 12.1 per day in 2014. In 2014, 579,308 NOLs were

issued to vehicles which ran red lights. However, the extended use of these devices has dramatically reduced the number of such violations. NOLs have declined by as much as 40 percent to 60 percent at intersections where red light cameras have been installed.

The charts below represent data collected during the Program's history. In the first year of the Program, the average camera issued 30.8 NOLs on a daily basis. In 2014, the average camera issued 8.8 NOLs on a daily basis - a 71 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 and events observed can be attributed to years in which the program was expanded and new sites were installed.

The overall decline in the number of red light running events observed and NOLs issued during the life of the program is an expected result and confirms that the consistent, predictable, citywide enforcement provided by red light cameras deters dangerous red light running.



## RED LIGHT CAMERA: DESCRIPTION OF LOCATIONS

Though the precise number may vary on a daily basis due to maintenance, on average, 181 red light cameras were operating at 150 intersections in New York City. 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 Active Cameras
Bronx	25
Brooklyn	57
Manhattan	16
Queens	64
Staten Island	24

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 1 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 red light cameras the City is allowed to use will make this public safety tool even more effective. DOT intends to relocate approximately 20 percent of these cameras in order to deter red light running at new locations.

## 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. Nationwide, approximately 25 percent of people killed in passenger vehicle crashes involve right angle crashes.

New York City's red light camera program has been effective at preventing right angle crashes. From 1991 through 1993, the three years before the red light camera 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 2011 through 2013, there were 59% fewer such crashes citywide, approximately 2,927 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 174 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 2013, 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	33	126	9	117	29	314
2013	9	111	4	65	15	204
Change	-24	-15	-5	-52	-14	-110

### *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 red light camera 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 2011 through 2013, there were 36 percent fewer reportable rear end collisions at signalized intersections citywide, approximately 4,695 annually. Most significantly, there was a 60 percent decrease in severe injuries during these periods (from approximately 341 to 137 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 2013, the most recent year for which data is available.

Rear End Collisions at Intersections with Red Light Camera Enforcement

	<b>Bronx</b>	<b>Brooklyn</b>	<b>Manhattan</b>	<b>Queens</b>	<b>Staten Island</b>	<b>Citywide</b>
Year Prior to RLC						
Installation at Intersection	42	283	38	268	77	708
2013	33	267	35	225	75	635
Change	-9	-16	-3	-43	-2	-73

*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 2013, the most recent year for which data is available.

Severity of Collisions at Intersections with Red Light Camera Enforcement

	<b>Bronx</b>	<b>Brooklyn</b>	<b>Manhattan</b>	<b>Queens</b>	<b>Staten Island</b>	<b>Citywide</b>
<u>Severe Injury</u> <sup>7</sup>						
Year Prior to RLC						
Installation at Intersection	20	41	8	39	12	120
2013	14	44	7	19	10	94
Change	-6	3	-1	-20	-2	-26
<u>Moderate Injury</u> <sup>8</sup>						
Year Prior to RLC						
Installation at Intersection	15	75	14	55	12	171
2013	11	60	13	67	16	167
Change	-4	-15	-1	12	4	-4
<u>Slight Injury</u> <sup>9</sup>						
Year Prior to RLC						
Installation at Intersection	321	1157	107	907	189	2681
2013	187	1118	136	864	185	2490
Change	-134	-39	29	-43	-4	-191

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

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

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



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 2013, the most recent year for which data is available.

Injuries at Intersections with Red Light Camera Enforcement by Mode

	<b>Bronx</b>	<b>Brooklyn</b>	<b>Manhattan</b>	<b>Queens</b>	<b>Staten Island</b>	<b>Citywide</b>
<u><b>Pedestrian Injury Crashes</b></u>						
Year Prior to RLC						
Installation at Intersection	38	111	29	58	18	254
2013	39	90	36	70	16	251
Change	1	-21	7	12	-2	-3
<u><b>Bicyclist Injury Crashes</b></u>						
Year Prior to RLC						
Installation at Intersection	2	20	4	23	3	52
2013	7	39	8	10	1	68
Change	5	19	4	-13	-2	13
<u><b>Motorist Injury Crashes</b></u>						
Year Prior to RLC						
Installation at Intersection	310	1142	93	921	194	2660
2013	267	1103	122	873	194	2459
Change	-143	-39	29	-48	0	-201

*Methodology for Crash Analysis:*

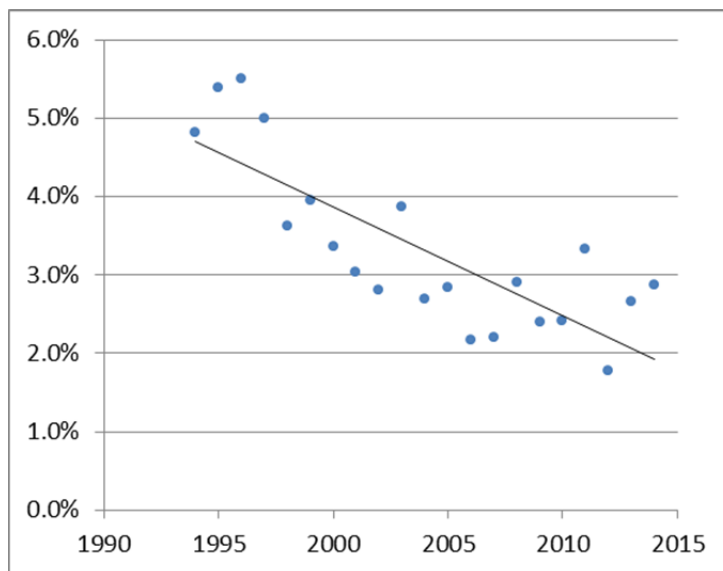
All data utilized for this analysis originates in motor vehicle accident reports compiled by police officers at crash scenes. The individual paper crash reports are sent by NYPD to the State DMV and State DOT, who enter the information into electronic databases, attribute locations to the crashes, categorize 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 5 percent of individuals who received an NOL requested a hearing to contest the violation. In 2014, less than 3 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 is authorized to conduct hearings, either by mail or in person, in any of the Department of Finance’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 88 percent of contested NOLs are upheld. In other words, in only 12 percent of hearings is an NOL overturned by an ALJ –which represents less than .04 percent of all NOLs issued.

RED LIGHT CAMERA VIOLATION DISPOSITIONS IN 2014	
Hearing Determination	Number of Hearings
NOL Upheld	14,552
NOL Overturned	2,044

## REVENUE AND EXPENSES

---

### Red Light Camera Program (Inception-June 2014)

Program Costs	December 1993 to June 2014	\$164,466,203
Capital Costs	Inception to June 2014	\$ 30,440,691
DOT Staffing	December 1993 to June 2014	\$21,411,581
DOF Staffing	Inception to June 2014	\$6,993,829
Total Expenses	Inception to June 2014	\$223,312,304
Revenues	Inception to June 2014	\$453,380,598
Net Revenues	Inception to June 2014	\$230,068,294

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Active Cameras	15	18	18	18	30*	30	30	50*	50	50	50	50	100*	100	100	121*	169*	188*	186*	187	181
Observed Events	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	1,167,969	908,801	839,881	802,351
Events/Day	1201.7	1046	874	708	1145	1073	1131	1241	1350	1218	1243	1122	1520	3422	2991	2897	3987.8	3199.9	2483	2301	2198
Events/Week	8435.0	7339	6149	4970	8034	7533	7962	8712	9475	8549	8751	7875	10670	24017	21055	20336	27991.2	22461	17477	16152	15430
Events/Month	36551.8	31800	26643	21535	34812	32641	34503	37750	41057	37044	37921	34124	46237	104075	91237	88122	121295	97331	75733	69990	66863
% Change in Events from previous year	NA	-13	-16.22	-19.17	61.65	-6.24	5.7	9.41	8.76	-9.77	2.37	-10.01	35.5	125.09	-12.33	-3.41	37.64	-19.76	-22.1	-7.58	-4.5
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	17.49	13.37	12.49	12.14
# 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	821,483	634,088	583,778	579,308
NOLs / Camera / Day	30.80	22.30	21.40	19.20	19.70	18.10	18.90	21.30	18.59	16.08	17.81	16.82	20.41	26.19	21.63	16.85	17.08	12.30	9.33	8.68	8.77
Hearing Requests	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	27,376	11,266	15,531	16,596
% of Hearings Guilty or Guilty with Reduction	86%	87%	89%	89%	88%	85%	84%	84%	84%	85%	85%	86%	88%	92%	92%	92%	96%	94%	94%	89%	88%

