



# New York City Red Light Camera Program

Program Review  
1994–2017

2018 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 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 sample of 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 over 75 percent.
- The Program has helped prevent crashes which are associated with red light running. A comparison of the three years prior to the launch of the Program to the most recent three year period for which data is available shows that reportable right angle crashes at signalized intersections have declined by 71 percent citywide, from 7,221 to 2,084 annually. In addition severe injuries from such crashes have declined by over 83 percent, from 633 to 103 annually.
- The Program has not led to an increase in rear-end crashes. A comparison of the three years prior to the launch of the Program to the most recent three year period shows that reportable rear end crashes at signalized intersections have declined by 41 percent citywide, from 7,348 annually to 4,344 annually. In addition severe injuries from such crashes have declined by 63 percent, from 341 to 126 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**

According to the Insurance Institute for Highway Safety, red light running crashes caused 811 deaths nationwide in 2016, with over half of those killed being 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 disobey 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 severely injurious high speed right angle crashes.

---

<sup>1</sup> "New Guidelines for Automated Enforcement Programs Emphasize Safety Amid rise in Red-Light running Crash Deaths" Insurance Institute for Highway Safety. July 24, 2018. Online available <https://www.iihs.org/iihs/news/desktopnews/new-guidelines-for-automated-enforcement-programs-emphasize-safety-amid-rise-in-red-light-running-crash-deaths>

Red light running unfortunately is very common, even though its dangers are well-known. 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, and 3 percent admit to doing so regularly or fairly often.<sup>2</sup> A 2015 Hunter College study, which examined driver behavior at thirteen New York City intersections, found that nine percent of observed New York City drivers violated 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 continue 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 at traffic lights, and some drivers fail to even look at traffic signals.<sup>5</sup>

## **ENHANCING SAFETY AT INTERSECTIONS**

In New York City, about half of fatal traffic crashes, and more than half of all pedestrian 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

---

<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>

<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

movement of both vehicles and pedestrians under this condition. 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.

### 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 larger 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 they 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.

---

<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

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.

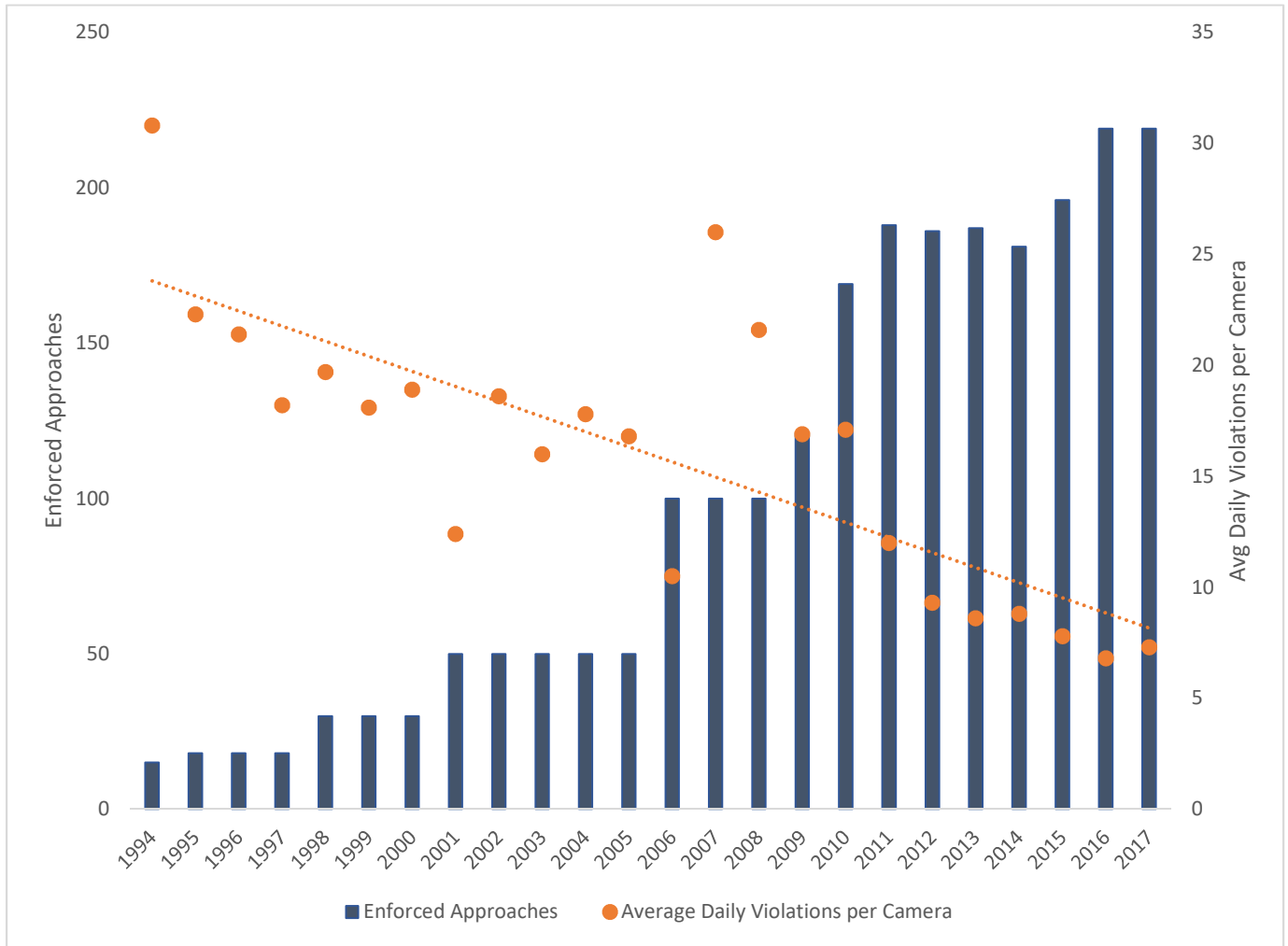
## **RED LIGHT CAMERAS DETER RED LIGHT RUNNING VIOLATIONS**

The purpose of the New York City Program is to deter motorists from running red lights. Accordingly, the more successful the Program is, the fewer red light violations should be observed over time.

In the first year of the Program, the average camera issued 31.8 NOLs on a daily basis. In 2017, the average camera issued 7.1 NOLs on a daily basis - a 78 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 fluctuations 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 has declined as the Legislature has 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 CAMERAS: DESCRIPTION OF LOCATIONS**

Though the precise number of active cameras may vary on a daily basis due to maintenance, on average, 211 red light cameras were operating at 150 intersections in New York City in 2016. 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	19
Brooklyn	49
Manhattan	18
Queens	57
Staten Island	21

\* Sums to greater than 150, as not all intersections' cameras are active at the same time.

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 display a 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, the statutory cap of 150 intersections - which is only about one percent of the City's 13,200 signalized intersections - prevents a broader application of this important public safety initiative. The reason the Program is effective at deterring red light violations is 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 bleeding). Many fatal and serious injury crashes can be prevented by increasing motorist compliance with traffic signals.

All data utilized for this analysis originates in motor vehicle collision reports (MV-104) 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 databases, attribute locations to the crashes, categorize traffic injuries by severity, and identify any errors. This cleaned and categorized data is provided to the City for planning and analysis purposes. The most recent complete transmission of data includes crashes which occurred in 2016.

### *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 2014 through 2016, there were 71 percent fewer such crashes citywide, approximately 2,084 annually. In addition, there was an 84 percent decline in severe injuries from right angle crashes at signalized intersections during these periods (from approximately 633 to 103 annually).

The following chart compares the number of right angle collisions which occurred at camera-enforced intersections during the year prior to a red light camera’s installation, as compared to 2016, 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	43	152	8	126	33	362
2016	16	50	5	38	4	113
Change	-27	-102	-3	-88	-29	-249

*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 where the driver 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 immediately 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 2014 through 2016, there were 41 percent fewer reportable rear-end collisions at signalized intersections citywide, approximately 4,344 annually. Most significantly, there was a 63 percent decrease in severe injuries between these periods (from approximately 341 to 126 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 2016, the most recent year for which complete 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	58	310	42	306	99	815
2016	67	283	36	208	56	650
Change	+9	-27	-6	-98	-43	-165

*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 when pedestrians are struck by turning vehicles, are not affected by red light cameras. The following table aggregates by borough the number and severity of all injury collisions which occurred at camera enforced intersections during the year prior to each red light camera's installation as compared to 2016, 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	16	66	12	50	16	160
2016	22	41	5	37	3	108
Change	+6	-25	-7	-13	-13	-52

<u>Moderate Injury</u> <sup>8</sup> Year Prior to RLC Installation at Intersection	20	94	22	81	31	248
2016	11	62	8	50	14	145
Change	-9	-32	-14	-31	-17	-103

<u>Slight Injury</u> <sup>9</sup> Year Prior to RLC Installation at Intersection	387	1295	132	945	220	2979
2016	270	1006	70	654	132	2132
Change	-117	-289	-62	-291	-88	-847

<sup>7</sup> 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.

<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 2016, 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>Pedestrian Injury Crashes</u> Year Prior to RLC Installation at Intersection	51	133	33	71	9	297
2016	40	114	17	64	9	244
Change	-11	-19	-16	-7	0	-53

	<b>Bronx</b>	<b>Brooklyn</b>	<b>Manhattan</b>	<b>Queens</b>	<b>Staten Island</b>	<b>Citywide</b>
<u>Bicyclist Injury Crashes</u> Year Prior to RLC Installation at Intersection	3	28	12	14	3	60
2016	10	48	9	19	4	90
Change	7	20	-3	5	1	30

	<b>Bronx</b>	<b>Brooklyn</b>	<b>Manhattan</b>	<b>Queens</b>	<b>Staten Island</b>	<b>Citywide</b>
<u>Motorist Injury Crashes</u> Year Prior to RLC Installation at Intersection	382	1349	127	1107	286	3251
2016	272	953	57	667	137	2086
Change	-110	-396	-70	-440	-149	-1165

## 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 2017, 2 percent of vehicle owners who received an NOL requested a hearing; the other 98 percent of individuals declined their opportunity for a hearing and agreed to pay the violation after the NOL was issued.

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 92 percent of contested NOLs are upheld. In other words, in only 8 percent of hearings is an NOL overturned by an ALJ –which represents less than 0.2 percent of all NOLs issued.

	Total	Percent of Total Violations Issued
<b>Red Light Camera Violations Issued in 2017</b>	538,451	100%
<b>Red Light Camera Hearings Requested in 2017</b>	11,951	1.71%
<b>NOL Upheld at Hearing in 2017</b>	11,001	1.54%
<b>NOL Overturned at Hearing in 2017</b>	950	0.18%

## REVENUE AND EXPENSES

---

### Red Light Camera Program (Inception-June 2017)

Program Costs	December 1993 to June 2017	\$182,574,506
Capital Costs	Inception to June 2017	\$30,440,691
DOT Staffing	December 1993 to June 2017	\$24,985,220
DOF Staffing	July 1996 to June 2017	\$7,859,844
Total Expenses	Inception to June 2017	\$245,860,261
Revenues	Inception to June 2017	\$532,643,413
Net Revenues	Inception to June 2017	\$286,783,152

	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
<b>1994</b>	15	438,622	1,202	8,435	36,552	NA	80.11	168,479	30.8	8,103	86%
<b>1995</b>	18	381,601	1,046	7,339	31,800	-13	58.08	146,812	22.3	7,908	87%
<b>1996</b>	18	319,720	874	6,149	26,643	-16.2	48.53	140,751	21.4	7,748	89%
<b>1997</b>	18	258,424	708	4,970	21,535	-19.2	39.33	119,397	19.2	5,968	89%
<b>1998</b>	30*	417,747	1,145	8,034	34,812	61.7	47.69	215,242	19.7	7,799	88%
<b>1999</b>	30	391,693	1,073	7,533	32,641	-6.2	35.77	198,324	18.1	7,832	85%
<b>2000</b>	30	414,030	1,131	7,962	34,503	5.7	37.71	207,260	18.9	6,967	84%
<b>2001</b>	50*	453,005	1,241	8,712	37,750	9.4	42.5	226,642	21.3	6,898	84%
<b>2002</b>	50	492,678	1,350	9,475	41,057	8.8	27.07	338,572	18.59	9,506	84%
<b>2003</b>	50	444,529	1,218	8,549	37,044	-9.8	24.42	292,614	16.08	11,323	85%
<b>2004</b>	50	455,048	1,243	8,751	37,921	2.37	24.93	325,024	17.81	8,739	85%
<b>2005</b>	50	409,489	1,122	7,875	34,124	-10.0	22.58	306,117	16.82	8,690	86%
<b>2006</b>	100	554,846	1,520	10,670	46,237	35.5	29.41	384,993	20.41	8,376	88%
<b>2007</b>	100	1,248,896	3,422	24,017	104,075	125.1	34.53	947,341	26.19	20,813	92%
<b>2008</b>	100	1,094,847	2,991	21,055	91,237	-12.3	29.91	791,734	21.63	22,990	92%
<b>2009</b>	121	1,057,463	2,897	20,336	88,122	-3.41	23.91	745,241	16.85	17,824	92%
<b>2010</b>	169	1,455,540	3,988	27,991	121,295	37.6	23.62	1,053,268	17.08	25,414	96%
<b>2011</b>	188	1,167,969	3,200	22,461	97,331	-19.8	17.49	821,483	12.3	27,376	94%
<b>2012</b>	186	908,801	2,483	17,477	75,733	-22.1	13.37	634,088	9.33	11,266	94%
<b>2013</b>	187	839,881	2,301	16,152	69,990	-7.58	12.49	583,778	8.68	15,531	89%
<b>2014</b>	181	802,351	2,198	15,430	66,863	-4.5	12.14	579,308	8.77	16,596	88%
<b>2015</b>	196	678,020	1,858	13,039	56,502	-15	9.48	555,025	7.76	15,346	91%
<b>2016</b>	196	561,335	1,538	10,795	46,778	-17	7.85	488,007	6.82	10,896	90%
<b>2017</b>	211	559,317	1,532	10,756	46,609	0	7.82	538,451	6.99	11,951	92%