LOS ANGELES POLICE COMMISSION

EXECUTIVE OFFICE
POLICE ADMINISTRATION BUILDING
100 WEST FIRST STREET, SUITE 134
LOS ANGELES, CA 90012-4112

(213) 236-1400 PHONE
(213) 236-1410 FAX
(213) 236-1440 TDD

April 20, 2011

BPC #11-0158

The Honorable City Council
City of Los Angeles
c/o City Clerk's Office

Dear Honorable Members:

RE: ANALYSIS OF JAY BEEBER'S REPORT ENTITLED "SAFER STREETS IN LOS ANGELES: WHY ENGINEERING COUNTERMEASURES ARE MORE EFFECTIVE THAN PHOTO ENFORCEMENT IN REDUCING RED LIGHT RELATED CRASHES" (CITY COUNCIL MOTION 11-0125)

At the regular meeting of the Board of Police Commissioners held Tuesday, April 19, 2011, the Board APPROVED the Department's report relative to the above matter.

This matter is being forwarded to you for approval.

Respectfully,

BOARD OF POLICE COMMISSIONERS

Maria Silva

MARIA SILVA
Commission Executive Assistant

Attachment

c: Chief of Police

AGENDA DATE: APRIL 19, 2011

OPEN SESSION

ITEM 8-B

DEPARTMENT'S REPORT, dated April 19, 2011, relative to Analysis of Jay Beeber's report entitled "Safer Streets in Los Angeles: Why engineering countermeasures are more effective than photo enforcement in reducing red light related crashes' (City Council Motion 11-0125), as set forth. [BPC #11-0158]

Recommendation(s) for Board action:

1. APPROVE the Department' report and TRANSMIT to City Council.

Commissioner Skobin moved, seconded by Commissioner Saltzman, to APPROVE the Department's report and TRANSMIT to City Council. By a vote of 3/2.

BPC #11-0158

INTRADEPARTMENTAL CORRESPONDENCE

April 19, 2011
16.2

TO: The Honorable Board of Police Commissioners

FROM: Chief of Police

RICHARD M. TEFANK
EXECUTIVE DIRECTOR

DATE

SUBJECT: ANALYSIS OF JAY BEEBER'S REPORT ENTITLED "SAFER STREETS IN LOS ANGELES: WHY ENGINEERING COUNTERMEASURES ARE MORE EFFECTIVE THAN PHOTO ENFORCEMENT IN REDUCING RED LIGHT RELATED CRASHES" (CITY COUNCIL MOTION 11-0125)

RECOMMENDED ACTIONS

1. That the Board of Police Commissioners (Board) REVIEW and APPROVE this report relative to the analysis of Jay Beeber's Report entitled "Safer Streets in Los Angeles: Why Engineering Countermeasures are More Effective Than Photo Enforcement in Reducing Red Light Related Crashes."

2. That the Board TRANSMIT this report to the City Council.

BACKGROUND

On January 26, 2011, Councilmembers Jan Perry and Dennis Zine introduced a motion (Council File {CF} No. 11-0125) requesting the Los Angeles Department of Transportation (LADOT), with the assistance of the Los Angeles Police Department (LAPD) and the Chief Legislative Analyst, to conduct an analysis of Jay Beeber's Report entitled "Safer Streets in Los Angeles: Why Engineering Countermeasures are More Effective Than Photo Enforcement in Reducing Red Light Related Crashes" (see attached).

The motion raised one area of concern:

1. Are the City's Photo Red Light intersections the most efficient and cost effective in reducing overall serious injury and fatal traffic collisions from red light violations?

DISCUSSION

In November 2010 and March 2011, Jay Beeber of the California Motorists Association and the Freedom Minute website released a report that indicates that the City has not appropriately incorporated effective countermeasures at its Photo Red Light (PRL) intersections. The report made the following claims:

1. Significant, sustained reductions in violations and crashes can be achieved when the yellow signal timing is increased by up to one second beyond the "minimum recommended time" based on the 85th percentile speed of free flow traffic approaching the intersection. Any driver adaptation to the longer yellow phase does not undo the benefit of an increase in yellow duration.
2. An all-red phase of two to three seconds may provide an added level of safety.
3. A protected left turn signal should eliminate most, if not all, left turn opposed crashes.
4. Most right angle crashes are a result of unintentional violations due to impairment, distraction, fatigue, etc. Red-light cameras have no effect on reducing these types of accidents.
5. Other engineering solutions which improve signal visibility and conspicuity may also be appropriate and contribute to safety improvements.
6. Once all appropriate engineering countermeasures are implemented, the need for costly photo enforcement systems will likely be eliminated. For intersections where engineering solutions have resulted in improved safety, adding red-light cameras may decrease safety due to an increase in rear-end collisions.

The report suggested that the City should immediately take the necessary steps to stop the Request for Proposal process and instead begin the process of evaluating intersections suspected of having an increased risk of red light related crashes to determine which engineering countermeasures would be most appropriate.

The report claimed that 95 percent of red light violations occur within the first two seconds and that 80 percent of violations occur during the first second after the light has changed to red. The report further claimed that late into red violations only account for five percent of red light running.

On July 1, 2010, the LAPD met with Mr. Beeber to discuss PRL operations in response to his inquiry about fatal traffic collisions at PRL intersections. Since that time, Mr. Beeber has been in periodic contact with City staff. On March 31, 2011, LAPD and LADOT staff met with Mr. Beeber as directed by the Board of Police Commissioners to discuss issues and recommendations contained in his report.

This report is a joint effort of LAPD and LADOT staff. All engineering issues addressed in this report were provided by LADOT.

ANALYSIS

Mr. Beeber claims that yellow signal timing should be increased by up to one second beyond the minimum recommended time, and that the minimum should be based on the 85th percentile, rather than the posted speed limit.

- **Significant, sustained reductions in violations and crashes can be achieved when the yellow signal timing is increased by up to one second beyond the "minimum recommended time" based on the 85th percentile speed of free flow traffic approaching the intersection. Any driver adaptation to the longer yellow phase does not undo the benefit of an increase in yellow duration.**

In California, jurisdictions are legally required to operate traffic control devices according to the standards established by the California Manual of Uniform Traffic Control Devices (MUTCD). With respect to setting the yellow change interval, the California MUTCD Section 4D.10 states:

> *"The purpose of the yellow signal indication is to warn traffic approaching a traffic signal that the related green movement is ending or that a steady red indication will be exhibited immediately thereafter and traffic will be required to stop when the red signal is exhibited.... The posted speed limit, or the prima facie speed limit established by the California Vehicle Code shall be used for determination of the minimum yellow change interval for the through traffic movement."*

Section 4D.10 also states that the minimum yellow change interval timing shall be calculated using the equation:

T = Minimum yellow change interval (sec)
V = Posted speed limit or prima facie speed (ft/sec)
d = Deceleration rate (10 ft/sec^2)
t_R = Reaction time (1 sec)

$$T = \frac{V}{2d} + t_R$$

Hence, the minimum yellow change interval shall be set in accordance with the posted speed limit—the higher the speed limit, the longer the yellow change interval shall be used. At PRL intersections, LADOT implemented the yellow time interval using a speed value that is five miles per hour higher than the posted speed limit. Hence, the yellow time interval used in the City exceeds the California MUTCD's standard for minimum yellow change interval. Generally, the actual approach speeds are reflected by the measured 85th percentile speeds may be slightly higher or lower than the posted speed limit. The upward adjustment of the speed value by five miles per hour accommodates the condition wherein the 85th percentile speed is slightly above the posted speed limit.

Further increasing the yellow change interval to accommodate the drivers driving beyond the 85th percentile speed would encourage disrespect for traffic signal control not just at one site but possibly at other traffic signals as well.

In the Federal Highway Administration report (also cited by Mr. Beeber), *Making Intersections Safer: A Toolbox of Engineering Countermeasures to Reduce Red-Light Running*, it was noted that a yellow "interval that is too long could decrease the capacity of the intersection and increase the delay to motorists and pedestrians. Present thought is that longer intervals will cause drivers to enter the intersection later and it will breed disrespect for the traffic signal. The tendency for motorists to adjust to the longer interval and enter the intersection later is referred to as *habituation*."

Furthermore, the cited studies which show significant benefit to lengthening the yellow change interval typically examined locations where the yellow change intervals were shorter than engineering guidelines, and thus were lengthened to meet those guidelines.

- **An all-red phase of two to three seconds may provide an added level of safety.**

The all-red clearance interval is an interval when all the signals are red, in all directions, and is intended to clear motorists who are proceeding through the intersection at the end of the yellow change interval. The California MUTCD does not require jurisdictions to implement an all-red clearance interval. Section 4D.10 states that "When used, red clearance intervals normally range from 0.1 to 2.0 seconds."

At all PRL intersections, an all-red clearance interval is already implemented. As with other intersections, an all-red clearance time is implemented based on the width of the cross street and the posted speed limit plus five miles per hour.

Generally, LADOT typically uses an all-red clearance interval under certain circumstances, for a very wide intersection, an offset intersection, and when it is desirable to delay the next green interval. At all PRL intersections, an all-red clearance interval is already implemented. As with other intersections, an all-red clearance time is implemented based on the width of the cross street and the posted speed limit plus five miles per hour.

Further extending the all-red clearance interval would reduce the capacity of the intersection and exacerbate delays, especially in congested corridors.

- **A protected left turn signal should eliminate most, if not all, left turn opposed crashes.**

Protected left turn signals can reduce left turn opposing traffic collisions. However, they can also significantly reduce traffic flow and volume. The City installs protected left turn arrows at intersections if there is a documented collision history in accordance with the goals of balancing intersection safety with sufficient traffic flow.

- **Most right angle crashes are a result of unintentional violations due to impairment, distraction, fatigue, etc. Red-light cameras have no effect on reducing these types of accidents.**

Red light running results from a combination of factors. It would be inaccurate to classify red light running as either wholly "intentional" or "unintentional." Consider drivers who intentionally speed up in order to beat the red light but are "unintentionally" behind the limit line when the light turns red.

Unintentional violations should also be considered for enforcement solutions. A major advantage of enforcement solutions is that they modify driver behavior and attitude. An inattentive driver may be complacent, distracted, or otherwise have an attitude that would be effectively modified through enforcement. This includes impaired or distracted drivers. Engineering solutions may be appropriate as well, but engineering and enforcement are not mutually exclusive.

Expert opinions indicate that a significant amount of red light running is intentional and that enforcement countermeasures can sometimes have a more dramatic impact than engineering countermeasures. However, the two should always be considered together as a multi-pronged traffic safety strategy.

There is scholarly disagreement regarding the intentionality of red light running, as well as the subjective and complex nature of driver motivations, it is inadvisable to categorize certain collisions as strictly unintentional. Traffic violators often run red lights because they believe they can get away with it. Consider the below reference:

> *"Applying consistent consequences in the form of fines for every violation will reduce red light running. Drivers will learn the behavior is no long tolerated. Failing to acknowledge and alter consequences of red light running behavior reduces the effectiveness of any countermeasure."*[1]

Speed limit signs shall be used to give notice of a prima facie or maximum speed limit except as provided under Section 22352, CVC. Chapter 2B of the California MUTCD states that speed limit signs shall be placed at the beginning of all restricted speed zones with intermediate placement placed at approximately one mile intervals. Speed limit signs at PRL intersections are placed in accordance with Section 627, CVC, Engineering and Traffic Surveys.

In addition, PRL warning signs are posted far enough back from the intersection to give motorists ample opportunity to stop for the red light. The placement of warning signs is an effective countermeasure to alert drivers that they are approaching an automated enforced intersection which decreases the chance of sudden braking, resulting in rear end traffic collisions.

- **Other engineering solutions which improve signal visibility and conspicuity may also be appropriate and contribute to safety improvements.**

Nationwide, studies have been conducted which demonstrate that traffic engineering countermeasures which improve traffic signal visibility and conspicuity can be effective in reducing incidences of red light running violations and/or related crashes. However, these studies were mostly conducted in some cities and states where traffic signals had not yet met the national standards or effective best practices. In contrast, the City's traffic signals go through a comprehensive design process and are implemented to meet or exceed the California (CA) and National MUTCD standards for effective visibility, conspicuity, and redundancy.

---

[1] Martinez, K., and Porter, B. 2006. "Characterizing Red Light Runners Following Implementation of a Photo Enforcement Program." Accident Analysis and Prevention, vol. 38, issue 5, Sept.

Engineering Countermeasure	Practice in L.A.	Explanation
Install signal head overhead	Yes	• All photo-enforced approaches have overhead signal heads on mast arms. • As a longstanding practice, L.A. installs mast arm signal heads on approaches with 2 or more lanes.
Install additional signals on the near side of the intersection	Yes	• L.A. installs a near side signal head to improve visibility, e.g., where the stop line is far from the nearest signal head, at curves, etc. • L.A. has a longstanding practice of providing 3 signal heads per approach, exceeding CA MUTCD standard of 2 signal heads.
Install SIGNAL AHEAD sign	Yes	L.A. installs SIGNAL AHEAD sign for locations where visibility is not favorable, like around curves, or where a signal is not expected at a an isolated location.
Install advance warning flashers	Yes	L.A. installs advance warning flashers for locations where visibility is not favorable, like around curves, and where lesser remedies are not sufficient.
Remove/relocate sight obstruction; improve line of motorist's sight	Yes	• None of the 32 PRL intersections have lateral or horizontal curve visibility limitations. • Generally, at an unfavorable line of sight, like at curves, an extra signal head is installed on the left side of roadway, nearside, and/or high-mounted.
Install programmable lenses, shields and visors	Yes	Used where visibility should be limited so nearby, non-applicable signal heads are not seen by motorists.
Add signals to achieve one per lane	No	CA MUTCD does not have any provision for installing one signal head per lane. This measure would be grossly unnecessary on most streets in the L.A.'s urban environment.
Replace with LED lens type	Yes	• All 32 PRL intersections have LED indications, ever since photo enforcement began. • L.A.'s 5-year LED conversion program will be completed by June of 2011.
Replace 8" with 12" signal head	Yes	L.A. always embraced the use of 12-inch heads, and currently uses 12-inch faces for all three standard signal heads, exceeding CA MUTCD standards.
Install double red signal	No	CA MUTCD does not have any provision for installing double red signal heads.
Install backplates	Yes	L.A. has been using backplates for decades.
Install rumble strips on approach	No	• Helpful for isolated signals on very high speed roadways, not typical in L.A. • Noise impact on adjacent land use.
Install near side signal	Yes	Generally, at an unfavorable line of sight around curves, an extra signal head is installed on the left side of roadway, nearside, and/or high-mounted.
Install protected left-turn signal phase	Yes	• Protected left-turn signal phase • L.A. regularly installs protected left-turn signal phases where there is a related collision history and/or where visibility is limited between left-turn vehicles and opposing through traffic.

- **Once all appropriate engineering countermeasures are implemented, the need for costly photo enforcement systems will likely be eliminated. For intersections where engineering solutions have resulted in improved safety, adding red-light cameras may decrease safety due to an increase in rear-end collisions.**

Mr. Beeber and the City are in agreement that there were five fatal traffic collisions that occurred at PRL intersections, prior to the installation of the cameras. The disagreement comes as whether or not they were related to the PRL Program.

Fatal traffic collisions at PRL intersections where checked to determined if they met a pre-defined criteria; those collisions that occurred at or in the intersection. Traffic collisions that occurred beyond 75 feet from the intersection were excluded. All reports that listed "red light" violation as the primary cause of the collision were considered, as well as violations that could reasonably have been caused by a red light violation, but were attributed to another violation. For example, consider the collision between a pedestrian and a garbage truck making a right turn. A review of the report shows that there are conflicting statements regarding the color of the light, and independent witnesses all admit that they did not see the actual collision. Although the investigating officer identified the cause of the collision as "failure to yield to a pedestrian in a crosswalk" it also could have reasonably been caused by a "failure to stop at a red light." It was not coded as such on the report due to the lack of credible witnesses.

Collisions where drivers claimed that they were "tired" or "distracted" were still included because a driver's own report as to their reason for running a red light is not considered reliable testimony. Furthermore, inattention and other irresponsible driving habits are the kind of behavior that is best remedied through consistent enforcement.

In 2004, a traffic collision occurred at Victory Boulevard and Laurel Canyon Boulevard involved a drunk driver in which a fetus was killed. After the collision, the drunk driver fled the scene. This collision was included because the goal of the analysis was to evaluate the current PRL Program by examining collisions at all 32 intersections using a period of three years prior to and after activation of the current system. Furthermore, this collision is an example of the tremendous benefit of the PRL Program, since the apprehension and prosecution of the suspect in this case was aided by the use of the photographic evidence.

The goal of the City's PRL Program is to reduce serious injury and fatal traffic collisions caused by drivers who fail to stop for red lights through high profile enforcement and education as well as to maximize the effective use of police resources.

In March 2011, the National Safety Council released a report that tracked fatal and non fatal traffic collisions over a five year period. It tracked crash trends at PRL intersections investigated using data from the National Highway Traffic Safety Administration's Fatality Analysis Reporting System and the National Automotive Sampling System General Estimate System. The study concluded that over this five year period, there were **256** less red light running **fatal** crashes which represented a 58 percent decrease.[2]

[2] The National Safety Council Report *Analysis of Intersection Fatal and Nonfatal Crashes from 2005 to 2009*, dated March 3, 2011.

There are approximately two million cars that travel through the City's PRL intersections on a 24 hour basis. That equates to 64 million cars per month or 760 million cars per year. Since the cameras were installed in 2006, red light related traffic collisions have decreased by 63 percent and there have been no red light related fatalities at PRL intersections. The engineering countermeasures and rigorous signal design standards implemented by LADOT at PRL intersections undoubtedly have an impact on public safety.

However, using engineering tools or using enforcement alone would not be as effective as a comprehensive safety strategy that embraces the three E's of safety--engineering, enforcement, and education.

CONCLUSION

The LAPD and LADOT agree that engineering countermeasures are an integral part of an overall traffic safety strategy. The City already utilizes many of these countermeasures identified in Mr. Beeber's report, and PRL intersections received a rigorous engineering analysis before the cameras were installed. We also believe that engineering countermeasures depends in large part on their ability to be consistently enforced. Respect for traffic laws and reducing dangerous driver habits are essential to traffic safety, and therefore, a strong law enforcement component must always accompany even the most rigorous engineering program.

RECOMMENDATIONS

It is requested that the Board approve the aforementioned "Recommended Actions."

If you have any questions regarding this matter, please contact Captain Thomas J. McDonald, Commanding Officer, Emergency Operations Division, at (213) 486-0680.

Respectfully,

CHARLIE BECK
Chief of Police

Attachment

BOARD OF
POLICE COMMISSIONERS
Approved APR 19 2011
Secretary Maria Silva

11-0125

PUBLIC SAFETY

JAN 26 2011

TRANSPORTATION

MOTION

In November 2010, Jay Beeber of the California Motorists Association released a report entitled "Safer Streets in Los Angeles: Why Engineering Countermeasures Are More Effective Than Photo Enforcement in Reducing Red-Light Related Crashes." This report documents the findings and conclusions reached by various experts in the field of traffic engineering and numerous research projects studying the problem of red-light running and effective countermeasures. According to the report, research studies that have examined the issue of red-light running and related crashes universally conclude that maximum intersection safety can only be achieved by first doing a comprehensive engineering study, implementing the appropriate engineering countermeasures and then evaluating the effectiveness of the countermeasures applied. Relatively inexpensive engineering countermeasures include, increasing the yellow signal phase, implementing a second "all red" phase and installing left-turn arrows. The report notes that in virtually every instance where studies have shown a reduction in accidents and when photo enforcement has been implemented, peer reviews have raised serious questions as to the validity of the results.

The August 2010 Controller's audit indicates that the existing photo red-light camera program has resulted in a net loss of $2.6 million dollars over the past two years, and that it has not conclusively shown to have improved safety on our roadways. It is important that the Los Angeles Police Department and the Department of Transportation review this new report and determine if the City's 32 red-light camera intersections are the most efficient and cost-effective ways to reduce overall serious injury and fatal traffic collisions resulting from red-light violations.

I THEREFORE MOVE that the City Council instruct the Los Angeles Department of Transportation, with the assistance of the Police Department and the Chief Legislative Analyst, to review Jay Beeber's November 2010 report entitled "Safer Streets in Los Angeles: Why Engineering Countermeasures Are More Effective Than Photo Enforcement in Reducing Red-Light Related Crashes" and report with recommendations on any changes to the City's photo red-light camera program.

PRESENTED BY _____
JAN PERRY
Councilmember, 9th District

SECONDED BY _____

msr

G

SAFER STREETS IN LOS ANGELES: Why Engineering Countermeasures Are More Effective Than Photo Enforcement in Reducing Red-Light Related Crashes

by

Jay Beeber
Safer Streets L.A.
California Motorists Association
818-205-4790
blickman@roadrunner.com

November 2010
Updated March 2011

SAFER STREETS IN LOS ANGELES: Why Engineering Countermeasures Are More Effective Than Photo Enforcement in Reducing Red-Light Related Crashes

INTRODUCTION

This report documents the findings and conclusions reached by various experts in the field of traffic engineering in numerous research projects studying the problem of red-light-running and effective countermeasures. The research projects reviewed in this report were conducted by and in cooperation with the Institute of Transportation Engineers (ITE), the Texas Department of Transportation, the U.S. Department of Transportation, the Federal Highway Administration, and the Virginia DOT, among others.

OVERVIEW

Research studies that have examined the issue of red-light running and related crashes universally conclude that maximum intersection safety can only be achieved by first doing a comprehensive engineering study at each high risk intersection, implementing the appropriate engineering countermeasures, and then evaluating the effectiveness of the countermeasures applied. Only after all suitable engineering solutions have been attempted and evaluated should photo enforcement be considered. [1, 2, 3, 4]

Countermeasure selection to address a problem location should be based on a comprehensive engineering study of traffic conditions, traffic control device visibility, crash history, and intersection sight distance. The findings from the engineering analysis can then be used with the procedure outlined in the "*Red-Light-Running Handbook: An Engineer's Guide to Reducing Red-Light-Related Crashes*" to determine the most viable set of countermeasures. [1]

Relevant findings noted in the studies reviewed include:

1. A "red-light-running problem" exists where there are excessive *crashes*, not simply excessive violations as not all violations have an equal tendency to cause crashes. Therefore the objective of a red-light-running treatment program should be the reduction of red-light related crashes as opposed to red-light violations. [1]

2. In virtually every situation where a red-light running problem exists, the proper application of proven engineering countermeasures can eliminate the problem without the need for costly photo enforcement systems.

3. Ninety-five percent of red light violations occur within the first 2 seconds of the red interval. Therefore, one of the most effective ways to reduce red-light running violations and crashes is to lengthen the yellow signal interval to 1 second *beyond* the minimum duration based on the *actual speed* of vehicles approaching the intersection. This, in

conjunction with an "all red phase" of 2 - 3 seconds to keep the intersection clear during the period when most violations occur, will remediate intersections with a red-light running problem and result in a significant improvement in safety.

4. At sites that exhibit an excess of left turn opposed crashes, providing a "protected left turn" (red arrow) for oncoming traffic will completely eliminate this problem. [1]

5. The 5% of crashes that occur late into the red phase (well after 2 seconds) are generally the most serious and are primarily caused by *unintentional* violations of the red signal resulting from such factors as driver impairment, fatigue and inattention/distraction. Photo enforcement cannot prevent these types of crashes. Engineering countermeasures that improve the signal visibility (larger signal heads, backplates, warning signs, etc.) have been shown to reduce, but not eliminate, these types of crashes. [1, 2, 3]

6. Engineering countermeasures are *proactive,* as opposed to enforcement which is *reactive*. Proactive solutions are always better than reactive solutions. Therefore, best practices dictate that prior to implementation of photo enforcement, intersections suspected of having an increased risk of red-light related crashes must undergo an appropriate engineering study to determine which engineering countermeasures would be most appropriate. In most cases, once those engineering countermeasures are applied, safety improves significantly, eliminating the need for additional enforcement countermeasures.

DISCUSSION

Understanding the complex nature of red-light-running and red-light related crashes is critical to implementing a sound public policy to mitigate this problem. The following concepts should aid those who wish to become informed on this issue.

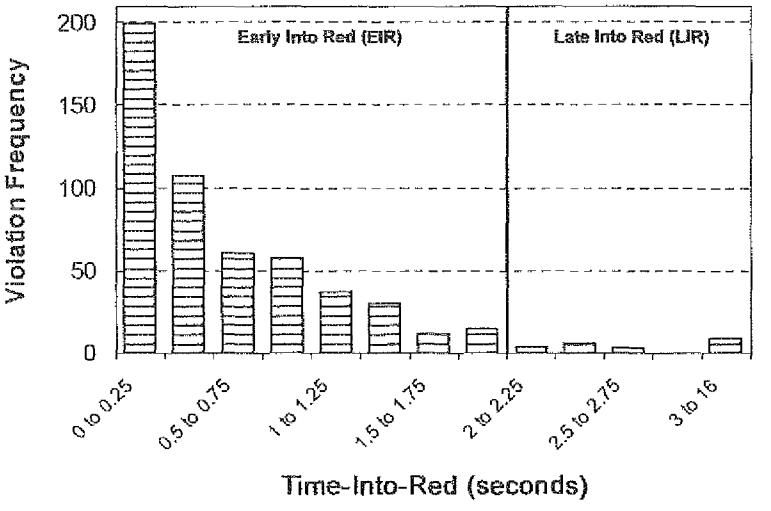
I. Concentrate on Reducing Crashes as Opposed to Violations

The objective of a red-light-running treatment program should be the reduction of red-light related crashes as opposed to red-light violations. [1] The reason for this is that not all red light violations have an equal tendency to cause crashes. For example, violations that occur early in the red phase (less than 2 seconds into the red) rarely result in the more serious right angle (T-bone) crashes due to the fact that cross traffic has not yet entered the intersection. However, these types of violations sometimes result in the less severe left-turn-opposed crashes. [1] Likewise, rolling right turns rarely result in crashes. [5] Therefore, a red-light-running treatment program that concentrates on reducing violations that do not give rise to a sizable number of crashes may not result in a significant improvement in safety.

II. Early Into Red vs. Late Into Red Violations

As alluded to in the previous section, traffic engineers separate violations into two groups, Early Into Red (EIR) violations and Late Into Red (LIR) violations. Figure 5-1 shows the relationship between violation frequency and time into red. [1]

Figure 5-1. Frequency of Red-Light Violations as a Function of Time-Into-Red.



Percentage of Violations Within Each Time Period

0 to 1 seconds - 80%; 0 to 2 seconds - 95%; >2 seconds - 5%

The vast majority of red light violations (95%) occur within the first 2 seconds of the red interval; 80% occur within the first second. Only 5% of all red light violations occur late into the red interval. Fortunately, engineering countermeasures can eliminate the risk of crashes due to violations that occur early into the red phase.

III. Eliminating EIR Crashes

Relatively inexpensive engineering countermeasures exist to prevent crashes due to vehicles entering into the intersection early into the red cycle.

A. Increase the Yellow Signal Phase.

The Institute of Transportation Engineers (ITE) recommends calculating a minimum yellow signal interval duration based on the 85th percentile speed of *free flow* traffic approaching the intersection. In a 2004 Texas DOT study, traffic engineers Bonneson and Zimmerman noted that when the yellow interval duration is set *one second longer* than the "minimum time" based on the 85th percentile speed, violations decreased by 53% and crashes decreased by 40%. In contrast, when the yellow interval duration is lowered to 1 second below the "minimum time", violations increased by 110%. [1]

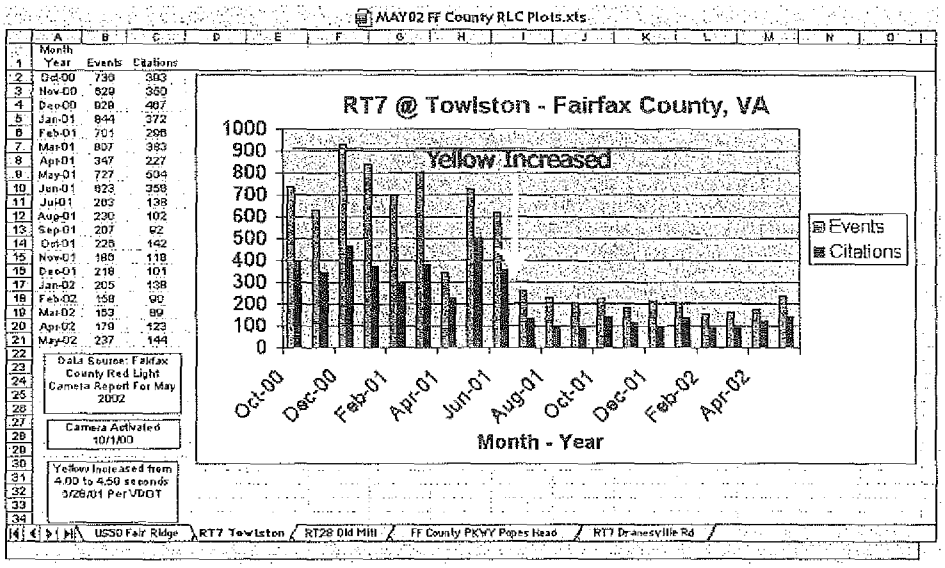
The chart below shows a similar 30% to 55% reduction in violations achieved at San Diego red-light camera sites when the yellow interval times were increased.

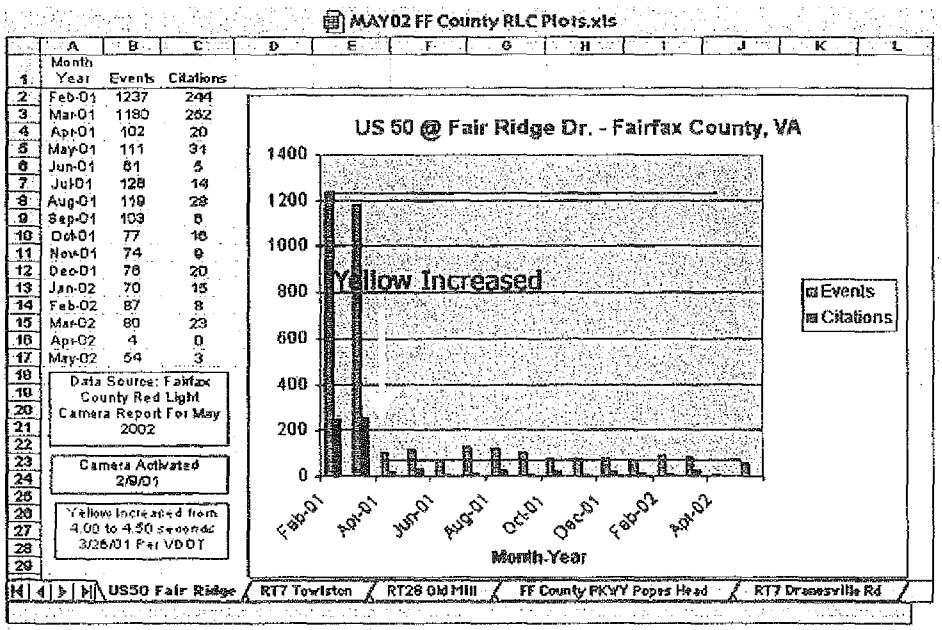
RESULTS FROM INCREASING YELLOW TIMES AT 6 of 19 SAN DIEGO RED LIGHT CAMERA SITES:

INT #	LOCATION	BEFORE YELLOW (seconds)	BEFORE VIOLATIONS (per 100 hrs)	AFTER YELLOW (seconds)	AFTER VIOLATIONS (per 100 hrs)	YELLOW INCREASE (seconds)	VIOLATION REDUCTION (percent)
1454	WB GARNET AVE @ INGRAHAM ST	3.00	98.8	3.20	55.9	0.20	-43.4%
1504	WB "F" ST @ 16TH ST	4.00	49.4	4.90	22.5	0.90	-54.5%
1534	WB MIRAMAR RD @ CAMINO RUIZ	4.40	42.5	4.80	29.8	0.40	-29.9%
1541	NB MISSION BAY DR TO WB GRAND AVE	3.10	363.4	4.70	42.2	1.60	-88.4%
1542	SB MISSION BLVD @ GARNET AVE	3.00	49.9	3.70	30.3	0.70	-39.3%
1553	EB MIRA MESA BLVD @ SCRANTON RD	3.90	98.7	4.30	52.7	0.40	-46.6%

SOURCE: San Diego Photo Enforcement System Review January 14, 2002

Likewise, the following two figures show how Fairfax County, VA achieved a significant, sustained reduction in violations when the yellow timing was increased by ½ second.





As for concerns that drivers will adjust their behavior to account for the longer yellow light and still run the red, the data shows that "yellow increases in the range of 0.5 to 1.5 seconds, that do not yield yellow durations in excess of 5.5 seconds, are still likely to reduce red-light-running by about 50 percent".[6] Any adaptation is minor and "does not undo the benefit of an increase in yellow duration".[6, 7]

B. Implement a 2 - 3 Second "All Red" Phase.

Traffic engineers have long known that implementing an all red phase (where the light is red in all directions) prevents accidents by allowing all vehicles to clear the intersection prior to releasing cross traffic. Logically, an all red phase of 2 - 3 seconds

(where necessary) will prevent crashes due to the 95% of red-light violations that occur within the first two seconds of the light turning red.

C. Employ a Protected Left Turn (Left Turn Arrow).
Left-turn-opposed crashes occur when drivers of left-turning vehicles waiting in the intersection at the end of the phase unintentionally turn in front of an opposing through vehicle, believing that its driver will stop for the red indication. If this through driver violates the red indication, he may collide with the left-turning driver. This situation is not likely to occur when protected-only left-turn phasing is provided. [1, 2, 3] Therefore, at intersections where left-turn-opposed crashes are over represented, significant safety improvement can be achieved by implementing a protected left turn (red arrow) phase. As the figure below[2] indicates, this should effectively eliminate left-turn-opposed crashes that occur early into the red cycle.

Relationship between Time of Crash, Left-Turn Phasing and Type of Crash

Time of Crash	Left-Turn Phasing	Most Likely Crash
Early in red	Protected-only	None
	Permitted or Prot./Perm.	Left-turn-opposed

By increasing the yellow signal phase to one second beyond the ITE minimum times based on the 85th percentile speed of free flowing traffic, increasing the all red phase to a minimum of two seconds and, where necessary, implementing a protected left turn, most crashes that result from EIR violations (95% of red light violations) can be prevented, eliminating the need for additional enforcement countermeasures. (For a full explanation of how proper signal timing can improve intersection safety, see our full report entitled, "*Maximizing Safety at Signalized Intersections Through Longer Yellow and All-Red Phases*").

IV. Reducing LIR Crashes

As stated above, Late Into Red violations represent only about 5% of all red light running violations. However, these violations are most likely to result in the more severe right-angle crashes. The problem, from a crash reduction standpoint, is that LIR violations are most frequently unintentional violations and are therefore resistant to the effects of increased red-light enforcement. [1]

Unintentional violations are committed by drivers who either are unable to safely stop or are unaware of the need to stop due to impairment, fatigue or inattention/distraction as well as poor signal visibility. Unintentional violations can occur at any time in the red cycle. Engineering countermeasures are the only viable option to reduce accidents caused by unintentional red-light-running.[1,2,3]

These countermeasures are generally geared towards increasing the signal visibility/conspicuity to ensure that the signal, and specifically the red display, captures the motorists' attention.[3] They include:
A. Place signals overhead vs. pole-mounted.
B. Increase the number of signal heads to provide a signal for each approach lane.

C. Use 12-in. signal lenses as opposed to 8-in. signal lenses.
D. Improve the motorists' line of sight to the signal head.
E. Provide two red-signal displays within each signal head.
F. Replace incandescent bulbs with brighter LED units.
G. Install backplates to enhance the contrast between the signal head and the surrounding background. This is particularly useful for signals oriented in an east-west direction to counteract the glare of the rising and setting sun or in areas of visually complex backgrounds.
H. Install Signal Ahead signs and/or advanced warning flashers.

Some combination of the above countermeasures should reduce crashes due to unintentional violations. However, these types of crashes cannot be completely eliminated as there will always be some measure of driver impairment, distraction or fatigue present on our roadways.

V. Additional Engineering Countermeasures

Table 8 lists many of the engineering countermeasures cited in the literature as having some ability to reduce red-light violations, related crashes, or both. [1] This information is provided as an illustration of possible additional countermeasures that can be applied to intersections with a red-light-running crash problem.

Table 8. Red-Light Violation Countermeasure Effectiveness.

Category	Countermeasure	Reported Reductions, %		
		Violations	Crashes	Reference[4]
Traffic char.	Reduce approach speed by 5 mph	30	25 to 30	*8, 8*
Signal operation	Increase signal cycle length by 10 s, if v/c ratio < 0.60	15	--	*8*
	Increase yellow interval duration by 0.5 s	40	20 to 25	*8, 8*
	Provide green extension (advance detection)[5]	65	--	*23*
	Add protected-only left-turn phasing[6]	--	70	*22*
Motorist information	Improve signal visibility via better signal head location	--	--	--
	Improve signal visibility via additional signal head	--	47	*20*
	Improve signal visibility by clearing sight lines to signal	--	--	--
	Improve signal conspicuity by upgrading to 12" lenses	--	47	*20*
	Improve signal conspicuity by using yellow LEDs	13	--	*14*
	Improve signal conspicuity by using red LEDs	--	--	--
	Improve signal conspicuity by using back plates	25	32	*8, 20*
	Improve signal conspicuity by using dual red indications	--	33	*20*
	Add advance warning signs (no active flashers)[7]	--	44	*20*
	Add advance warning signs with active flashers[7]	29	--	*21*
Traffic operation	Reduce delay through re-timing if v/c ratio > 0.70	10 to 50	--	*8*
	Reduce unnecessary delay through signal re-timing	--	--	--
	Improve signal coordination[8]	--	--	--
Geometry	Remove unneeded signals	100	100	--
	Add capacity with additional lanes or turn bays	--	--	--

VI. Arguments in Favor of Photo Enforcement (and Responses)

1. *Some studies have shown a reduction in accidents when photo enforcement has been implemented.*

In virtually every instance where those studies have been peer reviewed, serious questions have been raised as to the validity of the results.[8] In many cases, the research was conducted by parties that had a financial stake in the outcome of the results including the red light camera companies and members of the insurance industry, such as the Insurance Institute for Highway Safety, who benefit from increased premiums charged to drivers who accrue points on their licenses as a result of citations issued through photo enforcement. In other cases, the methodology was flawed since the researchers failed to control for other factors that would have had a positive effect on accident rates such as reductions in traffic volume and engineering improvements that were implemented at the time the cameras were installed. In contrast, numerous studies done by qualified research engineers have shown little to no overall benefit from the introduction of red light cameras. For example, a report by the Virginia Transportation Research Council, a division of the Virginia DOT, documenting the safety impact of red light cameras based on 7 years of crash data found the results from photo enforcement varied significantly by intersection and by jurisdiction, but that overall, "The cameras were associated with an increase in total crashes" and "The cameras were associated with an increase in the frequency of injury crashes".[4] Similarly, a 2008 University of South Florida report found that "Comprehensive studies conclude cameras actually increase crashes and injuries, providing a safety argument not to install them",[8] and a 2004 North Carolina A&T University study reported, "Our findings are more pessimistic, finding no change in angle accidents and large increases in rear-end crashes and many other types of crashes relative to other intersections".[9] Here in Los Angeles, the City Controller's audit stated, "The photo red light program has not conclusively shown to increase public safety".

2. *From 2004 through 2006, prior to the installation of the cameras, there were five red light related fatalities that occurred at the current PRL intersections. There have been no red light-related fatalities at any of the intersections since April 2006 when the first cameras were activated. This program has increased safety and saved lives.*

There is absolutely no evidence to show that this is true. In actuality, these five fatalities are prime evidence for the *ineffectiveness* of red-light cameras. First, the five "red-light related" fatalities were not all red-light related. Second, none of the crashes were of the type that could reasonably be expected to be prevented using photo enforcement. A review of the actual police reports showed the following: One accident was caused by a drunk driver, one by a j-walker 33 feet outside the intersection (the light was yellow when the driver when through), one was a garbage truck that hit a pedestrian while making a right turn on a GREEN light, one was caused by driver fatigue and one was caused by a distracted driver who ran the light well after it was red. Furthermore, the drunk driving fatality occurred at an intersection monitored by a red-light camera operated by the previous vendor, yet the LAPD chooses to use this incident as an example of the kind of accident that the current system would have prevented. Clearly, the red-light camera had no effect on whether this drunk driver ran the red light, as is the case with most serious collisions caused by drivers entering the intersection well into the red phase due to impairment, distraction or fatigue. The two accidents caused by driver fatigue and distraction also occurred well into the red phase, providing further evidence

that the most dangerous red-light running accidents occur unintentionally and thus can't be remedied by installing photo enforcement.

Additionally, as occurred in other jurisdictions studying the effectiveness of photo enforcement, the LAPD failed to take into account other factors that likely led to a reduction in accidents and fatalities. In this case, at the time the cameras were installed, the LADOT also increased the yellow light timing and implemented a one second all red phase. Also, traffic volume significantly decreased during this period due to record high gas prices and the current recession. As the City Controller's audit stated, "attributing these results solely to automated enforcement is questionable. (Those) changes alone could have made the intersection safer".

3. *The public supports the use of red-light cameras.*
Absolutely false. Each and every time the question of photo enforcement has been put before the voters, citizens have solidly rejected its use. Most recently, voters in the city of Anaheim overwhelmingly approved Proposition K which bans the use of red light cameras within the city's limits. The proposition won with 73% of the votes. Likewise, the vote in Mukilteo, WA was 70% against their automated ticketing machines. Voters in Houston and Baytown, TX opted to end those cities' red light camera programs as well. Last November, 72% of voters in Chillicothe, OH said no to photo enforcement; citizens in Heath, OH and College Station, TX also rejected cameras. Photo enforcement has never survived a public vote. Even city officials have lost faith in red-light camera programs. Loma Linda, Whittier, Moreno Valley, Rocklin, San Carlos, Union City, Yucaipa, Costa Mesa, Berkeley, Burlingame, Cupertino, Compton, El Monte, Fairfield, Fresno, Fullerton, Indian Wells, Irvine, Maywood, Montclair, Paramount, Rancho Cucamonga, Redlands, Roseville, San Jose, Santa Fe Springs, Santa Maria, Santa Rosa, Upland, and San Bernardino have all become disillusioned with photo enforcement and rejected their automated ticketing programs.

4. *Drivers will just adjust their behavior to account for the longer yellow light and still run the red.*
As we've seen, that's not what the data shows. The Texas study found that increasing the yellow timing by one second decreased violations by 53% and crashes by 40%.[1] That study as well as others noted above have shown that for yellow intervals less than about 5.5 seconds, adjustments in driver behavior do not negate the beneficial effects of longer yellow phasing. According to a 2004 study by Bonneson, et al., "Drivers do adapt to the increase in yellow duration; however, this adaptation does not undo the benefit of an increase in yellow duration."[6] And an ITE study had this to say, "It has frequently been claimed that if the yellow is 'too long', more drivers will use part of the yellow as green. More drivers, it was argued, would cross after yellow onset with long than with short yellow. The data show that the percentage of last-to-cross vehicles clearing the intersection (T+0.2) seconds or more past the yellow onset was not appreciably changed by the extension of the yellow phase."[7]

5. *The City of L.A has already increased the yellow timing above the minimums and implemented an all red phase, so now the only thing left is photo enforcement.*
Not exactly. While the LADOT did increase the yellow timing, in some cases .3 seconds above the minimums, and while that may have improved safety a bit, there are two

deficiencies. First, the DOT based the minimum timing on the posted speed limit. That speed is almost definitely lower than the actual speed of the traffic approaching the intersection. The ITE standard is to use the 85th percentile speed of free flow traffic. This could easily be 5 to 15 mph above the posted limit. The chart below from the California Traffic Manual shows the mandatory minimum timing for yellow signals.

POSTED SPEED or PRIMA FACIE SPEED		MINIMUM YELLOW INTERVAL
mph	km/h	Seconds
25 or less	40 or less	3.0
30	48	3.2
35	56	3.6
40	64	3.9
45	72	4.3
50	80	4.7
55	89	5.0
60	97	5.4
65	105	5.8

At 35 mph, the minimum yellow time is 3.6 seconds. The LADOT has set the time at 3.9 seconds, making it appear as though they are giving drivers extra time to react. However, if the approach speed is actually 40 mph, then, for the majority of motorists, the yellow timing is set at only the minimum, not above. If the 85th percentile speed is 45 mph, then the yellow timing is below that required for safety. Furthermore, as we have seen, setting the yellow timing a full 1 second beyond the minimum provides significant safety improvements. So for an intersection where the 85th percentile speed is 40 mph, the City could achieve perhaps up to a 53% reduction in violations and a 40% reduction in crashes by setting the yellow signal at 4.9 seconds. (Note: we are not suggesting increasing the speed limit, only the yellow signal timing based on actual vehicle speeds.)

Second, the DOT set the all red phase at about 1 second. As we have seen, 95% of violations occur in the first 2 seconds of red, so an additional safety benefit may be achieved by setting the all red phase at a full 2 - 3 seconds. Furthermore, based on the ITE formula for setting the all-red phase, most intersections in Los Angeles would require at least a 2 second all-red period.

Finally, changing the signal timing is only one possible engineering approach to reducing red-light related crashes. As Table 8 above shows, a whole host of possible countermeasures exist that could be employed. Only after a thorough engineering survey is done at problem intersections will we be able to determine what other means can be utilized to improve safety.

6. *Increasing the yellow and red phase will slow traffic flow through intersections leading to more congestion.*

Not necessarily. First, an increase in congestion would only be seen at the most congested intersections at the most congested times of the day. At other times, when the traffic volume is lower, all vehicles will have enough time to pass through the

intersection on the green phase and no additional congestion would be seen. However, if a trade-off must be made, the City should choose increased safety over traffic flow.

7. *There is a "halo effect" to the use of photo enforcement as drivers become more aware of the need to stop at red lights and all intersections in the city become safer.*
The so-called "halo effect" of red-light cameras has never been shown to be a real phenomenon. Instead, it is wishful thinking on the part of the red-light camera industry and their advocates. As stated earlier, studies that show a safety benefit to photo enforcement, even on an area wide basis, failed to take into account other factors that likely led to a reduction in accidents such as traffic volume and the introduction of engineering safety measures. Furthermore, studies such as the one by the Virginia DOT found no across-the-board safety improvement when red-light camera enforcement was implemented.[4] But one need only look to the experience here in Los Angeles to see that there is no halo effect at work. First, if this effect were real, there would have been a reduction in violations. That is not what we have seen. What has occurred, however, is a 53% increase in red-light related crashes at photo enforced intersections from 2008 to 2009. If, after a decade of use, the red-light cameras can't modify driver behavior and prevent an increase in accidents at the actual intersections where they are deployed, how can we expect them to modify driver behavior on a city-wide basis?

8. *Even if we implement all necessary engineering countermeasures, we should still use photo enforcement for added safety.*
At intersections where engineering countermeasures have eliminated the majority of red-light related accidents, employing photo enforcement may actually decrease safety. Virtually every study has shown that red-light cameras increase rear-end collisions by between 20 and 40 percent.[2,3,4,8] So, using photo enforcement at relatively safe intersections would likely have the unintended consequence of reducing safety. Additionally, it would be a huge waste of money. The authors of the Texas DOT study explained it this way: "The implementation of countermeasures with the intent to reduce crashes below that of the typical approach represents 'over treatment'. Over treatment is not likely to be cost-effective".[1]

9. *If we just put the cameras at the "right" intersections, the program will be successful.*
It should be clear by now that there will likely be no intersections that are "right" for photo enforcement if we implement the proper engineering countermeasures first. Furthermore, even if there are some intersections that would benefit from photo enforcement, that determination must be made after engineering countermeasures are applied and evaluated.

10. *Red-light violators must be punished.*
The proper goal of traffic enforcement is to increase safety. A program that does not significantly improve safety should be replaced with one that does, even if it results in less violators being "punished". Furthermore while popular perception is that red-light-running is often an intentional act, as we have seen, the studies have shown that this behavior can be both intentional and unintentional with the majority being unintentional.[1] Since unintentional violations due to impairment, distraction and fatigue are the type that cause the most serious right angle crashes, simply ticketing "scofflaws" will do nothing to eliminate severe accidents. If we merely want to ticket as many people as possible,

then the City's Photo Red Light Program is a complete success. According to the LAPD, we currently issue over 59,000 photo red light citations per year, 75 percent of which go to drivers making rolling right turns. At some intersection approaches the percentage of rolling right turn violations is as high as 97%. While the rolling right turn is technically a violation of our traffic laws, the risk from this behavior is miniscule, even to pedestrians. According to National Highway Traffic Safety Administration statistics, nationwide only .01% or 1 in 10,000 of all right turn on red crashes involved a pedestrian or bicyclist and resulted in injury.[5] However, that statistic is for all right turn on red crashes, not just those that involved a vehicle making a *rolling* right turn on red. Therefore the number of crashes that involved a pedestrian or bicyclist where a vehicle was making a rolling right turn on red must be less than 1 in 10,000. In addition, some portion of those crashes is likely to have been caused by the pedestrian or bicyclist as opposed to the motorist. The risk of crashes due to motorists making a rolling right turn on red is so small that no studies have ever directly quantified it. We therefore undertook an analysis of Los Angeles crash statistics to determine how much risk this behavior poses to other motorists and pedestrians. We found that the average number of rolling-right-turn collisions each year was approximately 45 out of approximately 56,000 collisions annually in the City of L.A. This represents just 0.079% of all accidents, or 1 in 127,000, an extremely low percentage. Additionally, the majority of collisions were classified as resulting in minimal or no injuries, even when pedestrians or bicyclists were involved. In fact, there were no fatalities noted due to RRTs for any of the 8 years studied. We also estimated that the chance that a rolling-right-turn will result in a collision is 0.00029% based on an approximately 15,540,519 rolling-right-turns occurring annually in the City of Los Angeles. Statistically, this means that a driver would have to make 345,000 rolling right turns before they might be involved in a collision. In actuality though, a careful driver who yields appropriately prior to making a right turn on red, whether or not they come to a complete stop, may never be involved in a collision due to this behavior. (See our full report, *"How Dangerous is a Rolling Right Turn?"*)

Supporters have repeatedly stated that public safety is the number one priority of the City's Photo Red Light Program, not punishment or revenue generation. If this is true, then those supporters should eagerly endorse the engineering solutions outlined in this report which have been scientifically proven to achieve significant safety improvements at signalized intersections. Engineering countermeasures are consistently successful because they are proactive; they physically prevent two vehicles from occupying the same space at the same time, thereby averting collisions. Photo enforcement, on the other hand, is reactive, and relies on the hope that drivers will modify their behavior in response to or to avoid punishment, a much less effective strategy for improving safety.

11. *Any program that can prevent accidents and prevent even one fatality from occurring is worthwhile.*

Not if there are better alternatives that would be less costly and prevent more accidents and fatalities. The measure of whether any public program is worthwhile is not whether it achieves *any* benefit, but whether it achieves the maximum benefit possible at the lowest cost. The City currently employs red-light cameras at 32 intersections with plans to expand that number to 64 at a recurring cost of millions of dollars annually. The engineering solutions outlined in this report can be employed at intersections throughout the city for a much lower one-time expenditure. This approach is not only the most cost

effective, it achieves a greater safety benefit at a significantly larger number of sites. Research studies that have examined the issue of red-light running and related crashes universally conclude that maximum intersection safety can only be achieved by first doing a comprehensive engineering study at each high risk location, implementing the appropriate engineering countermeasures, and then evaluating the effectiveness of the countermeasures applied. [1, 2, 3, 4, 8] When questioned on this point on a national radio program, Adrian Lund, president of the Insurance Institute for Highway Safety stated, "One of the things we think should happen (when considering) any red light camera program is that first cities should review their signal timing. We've looked at that, quite right, there are studies on that and we did see a reduction in violations when you lengthen the yellow light".

12. *The City has no money to do the necessary engineering studies.*
The City is planning on entering into a multi-year contract obligation costing tens of millions of dollars in public funds. Prior to doing so, the City should allocate a small portion of that money to the necessary studies and engineering countermeasures. The likely result is that the anticipated expenditure of funds on a new photo red-light program may not be necessary, saving the City tens of millions of dollars in the short and long term.

13. *The photo red-light contractor can do the necessary engineering studies and pay for all the necessary infrastructure.*
The purpose of any engineering studies done by a photo red-light contractor will not be to determine what engineering countermeasures might be appropriate for a particular intersection. Their sole purpose will be to determine *where*, not *if*, the cameras are to be deployed. This is putting the cart before the horse. Furthermore, once the City enters into a contract, it will be obligated to employ the cameras somewhere in the city and the cost of doing so, including all the upfront costs and operating fees will be included in the monthly fee due the vendor. The City currently spends over $4.3 million annually on the Photo Red Light Program with a net loss of over $1 million. If a new and expanded program is implemented, those costs and losses are likely to double or even triple. First, there will be a cost for new equipment at twice the number of intersections. Second, operational costs will likely double with twice the number of intersections being monitored. Finally, the income from issued citations currently used to offset some costs, will likely not double. As the LAPD reports, many cited vehicle owners simply ignore the citation due to the fact that the L.A. Superior Court chooses not to notify the DMV in these cases. As this policy is publicized, even more of those ticked will ignore their citations. Furthermore, recent published appeals court rulings have determined that the evidence used in photo red-light cases violates the hearsay rule. As the impact of these rulings begins to increase the likelihood that violators can successfully challenge their citations, more motorists may choose to fight their tickets and many of them will be successful. The city of San Bernadino recently chose to buy their way out of their Photo Red Light contract with American Traffic Solutions (the current vendor for Los Angeles) due to concerns of losing additional revenue after courts in that county ruled that photo ticket evidence was inadmissible hearsay. These factors will significantly impact the offsetting funds the City relies on to pay for the cost of the Photo Red Light Program.

VII. Putting It All Together

1. Significant, sustained reductions in violations and crashes can be achieved when the yellow signal timing is increased by up to 1 second beyond the "minimum recommended time" based on the 85th percentile speed of free flow traffic approaching the intersection. Any driver adaptation to the longer yellow phase does not undo the benefit of an increase in yellow duration.
2. An all-red phase of 2 - 3 seconds may provide an added level of safety.
3. A protected left turn signal should eliminate most, if not all, left turn opposed crashes.
4. Most right angle crashes are a result of unintentional violations due to impairment, distraction, fatigue, etc. Red-light cameras have no effect on reducing these types of accidents.
5. Other engineering solutions which improve signal visibility and conspicuity may also be appropriate and contribute to safety improvements.
6. Once all appropriate engineering countermeasures are implemented, the need for costly photo enforcement systems will likely be eliminated. For intersections where engineering solutions have resulted in improved safety, adding red-light cameras may decrease safety due to an increase in rear-end collisions.

CONCLUSION

The way forward should now be clear. The City of L.A. should immediately take the necessary steps to stop the RFP process and instead begin the process of evaluating intersections suspected of having an increased risk of red-light related crashes to determine which engineering countermeasures would be most appropriate. Proceeding with the RFP is counterproductive to the goal of safer streets and public officials that support continuing this course of action are abrogating their responsibility to the citizens they represent.

*The author of this report has never received a photo enforced citation. His last citation for a moving violation occurred in 1988.

REFERENCES

1. Bonneson, J.A., and K. Zimmerman. *Development of Guidelines for Identifying and Treating Locations with a Red-Light-Running Problem.* Report No. FHWA/TX-05/0-4196-2. Texas Department of Transportation, Austin, Texas, September 2004. Available at: http://www.thenewspaper.com/rlc/docs/04-alternatives.pdf

2. J.A. Bonneson and K. Zimmerman. *Red-Light-Running Handbook: An Engineer's Guide to Reducing Red-Light-Related Crashes.* Report No. FHWA/TX-05/0-4196-P1. Texas Department of Transportation, Austin, Texas, September 2004. Available at: http://tti.tamu.edu/documents/0-4196-P1.pdf

3. McGee, H.W. *Making Intersections Safer: A Toolbox of Engineering Countermeasures to Reduce Red-Light Running.* Institute of Transportation Engineers, Washington, D.C., 2003. Available at: http://www.ite.org/library/redlight/

4. Garber, N.J.; Miller, J.S.; Abel, R.E.; Eslambolchi, S.; and Korukonda, S.K. 2007. *The impact of red light cameras (photo-red enforcement) on crashes in Virginia.* Report no. VTRC 07-R2. Charlottesville, VA: Virginia Transportation Research Council. Available at: http://www.virginiadot.org/vtrc/main/online_reports/pdf/07-r2.pdf

5. Compton, Richard 1995. *The Safety Impact of Right Turn On Red Report To Congress*, Traffic Tech, Technology Transfer Series, Number 86, February 1995, National Highway Traffic Safety Administration. Available at: http://www.nhtsa.gov/people/outreach/traftech/1995/TT086.htm

6. Bonneson, J.A. and Zimmerman, K.H. 2004. *Effect Of Yellow Interval Timing On The Frequency Of Red-Light Violations At Urban Intersections.* Transportation Research Record 1865:20-27. Washington, DC: Transportation Research Board. Available at: http://www.motorists.org/red-light-cameras/TRB2004-1228.pdf

7. Stimpson, W.A.; Zador, P.L.; and Tarnoff, P.J. 1980. *The Influence Of The Time Duration Of Yellow Traffic Signals On Driver Response.* ITE Journal 50:22-29. Available at: http://www.thenewspaper.com/rlc/docs/armey/80duration.pdf

8. Langland-Orban, B.; Pracht, E.E.; Large, J.T. *Red Light Running Cameras: Would Crashes, Injuries and Automobile Insurance Rates Increase if They are Used in Florida?* Florida Public Health Review, 2008; 5:1-7 at 2. Available at: http://www.thenewspaper.com/rlc/docs/2008/fl-orban.pdf

9. Burkey M. and Obeng, K. 2004. *A detailed investigation of crash risk reduction resulting from red light cameras in small urban areas.* Greensboro, NC: North Carolina Agricultural and Technical State University. Available at: http://www.thenewspaper.com/rlc/docs/burkeyobeng.pdf.

LOS ANGELES POLICE COMMISSION

EXECUTIVE OFFICE
POLICE ADMINISTRATION BUILDING
100 WEST FIRST STREET, SUITE 134
LOS ANGELES, CA 90012-4112

(213) 236-1400 PHONE
(213) 236-1410 FAX
(213) 236-1440 TDD

December 23, 2010 BPC #10-0480

The Honorable Public Safety Committee
City of Los Angeles
c/o City Clerk's Office
City Hall, Room 395
Los Angeles, CA 90012

Attention John White:

RE: CITY COUNCIL MOTION RELATIVE TO CONTROLLER'S AUDIT OF THE PHOTO RED LIGHT PROGRAM (CITY COUNCIL FILE NO. 10-1502)

At the regular meeting of the Board of Police Commissioners held Tuesday, December 14, 2010, the Board APPROVED the Department's report relative to the above matter.

This matter is being forwarded to you for approval.

Respectfully,

BOARD OF POLICE COMMISSIONERS

Maria Silva

MARIA SILVA
Commission Executive Assistant I

Attachment

c: Chief of Police

BPC #10-0480 8A

INTRADEPARTMENTAL CORRESPONDENCE

RECEIVED
DEC 01 2010
POLICE COMMISSION

November 30, 2010
16.2
CB# 10-0010
OCOP# 2010-09-03

REVIEWED

TO: The Honorable Board of Police Commissioners

FROM: Chief of Police

RICHARD D. TEFANK
EXECUTIVE DIRECTOR

12/1/10
DATE

SUBJECT: CITY COUNCIL MOTION RELATIVE TO CONTROLLER'S AUDIT OF THE PHOTO RED LIGHT PROGRAM (CITY COUNCIL FILE NO. 10-1502)

RECOMMENDED ACTIONS

1. That the Board of Police Commissioners (Board) REVIEW and APPROVE this report in response to the City Council Motion (Hahn) relative to the City Controller's Audit of the Photo Red Light Program (PRLP), Council File (CF) No. 10-1502;

2. That the Board TRANSMIT the report to the Audits and Governmental Efficiency and Public Safety Committees; and,

3. That the Board APPROVE the continuance of the City's Photo Red Light Program.

BACKGROUND

On September 29, 2010, Councilwoman Janice Hahn moved that the Los Angeles Police Department (Department), with the assistance of the Los Angeles Department of Transportation (LADOT) and the City Administrative Officer, be directed to report on the findings of the City Controller's audit relative to the PRLP and on possible recommendations to terminate the Program.

The motion raised three areas of concern:

1. The PRLP's impact on public safety;
2. The PRLP's impact on City finances; and,
3. The intersection selection process.

DISCUSSION

PART 1: THE PHOTO RED LIGHT PROGRAM'S IMPACT ON PUBLIC SAFETY

The Benefits of Automated Enforcement

The Department supports the continued use of the PRLP as part of an overall strategy to reduce the incidence of serious injury and fatal traffic collisions resulting from red light violations in the City. Traditional field enforcement has been unable to sufficiently address this problem as only seven percent of moving violations written by field personnel are for red light violations.

With the operation of 32 PRL intersections, the Department's PRLP more than quadrupled the number of citations issued from 14,000 to 59,000 citations annually. In addition to providing efficient and accurate enforcement, the PRLP also serves as a high visibility public awareness campaign, putting drivers on notice that *the City of Los Angeles does not tolerate red light running.* The Department believes that the increased driver compliance that accompanies better enforcement leads to a decrease in traffic related accidents.

Measuring Effectiveness

The Department traffic collision analysis has shown an overall decrease in red light collisions at PRL intersections since their deployment. From 2004 to 2009, the Department noted an overall 63 percent decrease in red light related traffic collisions at PRL intersections, as well as an overall decrease of 10 percent in all types of collisions. Additionally, there have been no red light related fatalities since program activation (compared to five fatalities in the three years prior to PRL enforcement, from 2004-2006).

The reduction in red light related traffic collisions is consistent with numerous published studies of PRLPs by research scientists who have conducted extensive statistical analysis far beyond law enforcement capabilities. For example, a meta-analysis on the effectiveness of red light cameras was recently published in the Journal of the Institute of Transportation Engineers *Effectiveness of Red Light Cameras,* Brian Bochner and Troy Walden, ITE Journal, May 2010, (Attachment 2).

This study analyzed hundreds of PRL intersections over various time frames from dozens of different localities and concluded that "red light cameras substantially reduce red light violation rates" and "reduce crashes that result from red light running." It also concluded that red light cameras "usually reduce crash severity by virtue of reducing the more severe right angle crashes."

On June 30, 2010, Michael Geraci, Director of the Office of Safety Programs for the National Highway Traffic Safety Administration (NHTSA), testified before the United States House of Representatives that approximately 1,000 people die in red light related traffic collisions every year in the United States. Mr. Geraci stated that red light cameras have been shown to reduce collisions by 30 to 50 percent. He concluded that "Automated enforcement programs can be an effective countermeasure for reducing crashes at high-risk locations."

The Controller's Assessment of Department Collision Statistics

The Controller's audit contains a discussion of Department traffic collision statistics and recommends several improvements to the gathering and analyzing of statistical data (Attachment 3). The audit states that a definitive conclusion about public safety cannot be made based solely on the Department's location-specific statistical analysis of collision reports.

The audit raised two main areas of concern: 1) The thorough and accurate capturing of collision data; and 2) The proper analysis of the data.

1. **Thorough and Accurate Capturing of Collision Data.** The audit pointed to several areas that raised questions about the ability of Department statistics to be conclusive:

The Department acknowledges the limitations of current data capturing methods and has committed to making improvements where possible. A plan to increase the number of fields captured by divisional databases is underway and a more integrated statistical tracking system is being investigated.

2. **Proper Analysis of the Data.** The audit recognized that there are many factors that can affect collision rates and suggested that Department statistical analysis incorporate variables such as Citywide collision trends, changes in fuel prices, fluctuations in traffic volume, and weather patterns (Attachment 3, Pages 32-34).

Presently, the Department does not have the resources to complete the level of analysis being recommended. Location-specific statistics are monitored in terms of general trends, primarily to watch for unintended consequences, such as a dramatic spike in rear-end traffic collisions (which the City has not experienced).

Traffic Collision Increases at PRL Intersections

In November 2009, in response to a media report, the Department conducted an in-depth analysis of traffic collision statistics six months before and six months after the installation of PRL equipment. Over six hundred traffic collision reports were manually reviewed to determine their relevancy to the PRLP. The results of this shortened study period showed a decrease in only half of the intersections, with the other half either exhibiting no change or a slight increase. The

Department agrees with the auditor's assessment that the time period of this particular study was insufficient to make conclusions about the impact of the PRLP.

As stated earlier, from 2004 to 2009, there has been an overall decrease of 63 percent in red light collisions at PRL intersections. Additionally, there has been an overall decrease of 10 percent in all types of collisions and no red light related fatalities since program activation (compared to five fatalities in the three years prior to PRL enforcement from 2004-2006).

PART 2: THE PRL PROGRAM'S IMPACT ON CITY FINANCES

The Controller's audit found that the PRLP has not covered its operational costs and cites a $2.5 million net loss over the last two years (Attachment 3, Page 40). Revenues from the PRLP have been lower than expected due to a lower collection rate on PRL citations. Unfortunately, discussion with the Los Angeles Superior Court to modify their procedures to increase collections on outstanding PRL citations has not proven successful.

Court Collections

The Department believes receipts from the PRLP have been lower than expected due to the decision of the Los Angeles County Courts not to use administrative collection tools such as a Department of Motor Vehicle (DMV) hold for failures to appear or the Franchise Tax Board (FTB) in the collection of outstanding PRL cases. While the court currently refers outstanding PRL citations to their contracted collection agency, GC Services, approximately 56,000 PRL citations remain open and unresolved in the court system. These outstanding citations represent over $7 million in potential revenue to the City. The collection rate for fiscal year 2009/2010 was 23 percent.

The DMV hold is an important element to the successful operation of a PRLP. The State legislature recognized this in 1999 when Section 40509 of the California Vehicle Code was amended to specifically allow for notification to the DMV for failure to appear on PRL cases. Without a DMV hold, there is effectively no legal leverage to compel violators to respond to the court order.

Additionally, the FTB is a valuable collection resource that has proved to be highly effective in other counties. For example, when the County of San Diego instituted an aggressive FTB program, they collected over $30 million in outstanding court-ordered debt in the first year.

The DMV hold and FTB programs are currently being utilized for PRL citations in San Bernardino, Riverside, San Diego, and Ventura County courts with highly successful results.

The Department, LADOT, and the City Attorney's Office, have had discussions with senior Los Angeles County Court officials in order to address the low collection rate of PRL citations. Court leadership has decided to stay with the current policy.

PART 3: INTERSECTION SELECTION

The Controller's audit notes that the method used to select the PRL intersections eliminated some intersections that had higher collision rates. The intersection selection criteria were developed in cooperation with the LADOT under the direction of the City Council. Efforts were made to place public safety as a top priority, while also balancing the practicality of implementation and Citywide coverage.

The concerns raised in the report regarding infrastructure funding have been addressed in the recently released PRL Request for Proposals (RFP). The LADOT has also committed to working with Caltrans for the upcoming contract and to allow for a reasonable time schedule.

Citywide Implementation

The audit notes that City Council emphasized the importance of placing at least one PRL in each Council District. The Department sought to accommodate the Council, while still prioritizing public safety, by selecting the most "accident-prone" intersections in their respective districts. Thus, the need for targeted enforcement was balanced with the desire for a broader implementation of the PRLP.

The goal of balanced coverage is also strongly motivated by a public safety awareness component. The PRLP operates as both a high visibility enforcement and educational tool. The ripple effect of a PRL intersection on the surrounding community increases public attention to red light compliance. As such, a PRLP has the maximum public safety benefit when enforced intersections are spread throughout the City.

As a matter of information, selections based on collision history alone would have placed 80 percent of PRL intersections in either the Valley or West Bureaus, leaving little to no coverage for huge swaths of the City and excluding the following five Council Districts entirely: 1, 7, 11, 14, and 15. Uneven distribution can lead to claims that the City is unfairly targeting particular communities. Balanced coverage also provides for equitable distribution of court case load.

The Department acknowledges that limiting the selection region to Council District may have been too narrow to allow for the necessary latitude in intersection selection. For any future contracts, the Department would prefer limiting the selections to the four geographic police bureaus instead of the smaller 15 Council Districts, which would achieve Citywide coverage while allowing for greater latitude to focus on intersections with the greatest collision problems.

CONCLUSION

The Department and the LADOT support the continued use of the PRLP as part of an overall strategy to reduce the incidence of serious injury and fatal traffic collisions resulting from red light violations in the City.

RECOMMENDATIONS

It is requested that the Board approve the aforementioned "Recommended Actions."

If you have any questions regarding this matter, please contact Captain Thomas J. McDonald, Commanding Officer, Emergency Operations Division, at (213) 486-0680.

Respectfully,

CHARLIE BECK
Chief of Police

BOARD OF
POLICE COMMISSIONERS
Approved December 14, 2010
Secretary Maria Silva

Attachments

PUBLIC SAFETY

AUDITS & GOVERNMENTAL EFFICIENCY

MOTION

The Controller has just released an audit which concludes that red-light cameras have not improved safety. The audit indicates that the red-light camera program has bypassed some of the City's most dangerous intersections, cost more than $2.5 million over the last two years and failed to adequately demonstrate an improvement in safety.

The audit advises that while the camera program was supposed to reduce accidents at the highest-risk intersections, some of the most accident-prone corners were passed over, and only half of the intersections equipped with cameras showed a reduction in accidents.

The audit also advises that the Police Department operators of this program as well as the Department of Transportation have been unable to conclusively document safety improvements, and that a more comprehensive means of evaluating the effectiveness of red-light cameras is needed.

I THEREFORE MOVE that the Police Department with the assistance of the Transportation Department and the City Administrative Officer be directed to report on the findings of the Controller's audit relative to the photo red-light program and on possible recommendations to terminate this program if the findings warrant termination.

PRESENTED BY: _____
JANICE HAHN
Councilwoman, 15th District

SECONDED BY: _____

September 29, 2010
ak

Traffic-law enforcement and risk of death from motor-vehicle crashes: case-crossover study

Donald A Redelmeier, Robert J Tibshirani, Leonard Evans

Summary

Background Driving offences and traffic deaths are common in countries with high rates of motor-vehicle use. We tested whether traffic convictions, because of their direct effect on the recipient, might be associated with a reduced risk of fatal motor-vehicle crashes.

Methods We identified licensed drivers in Ontario, Canada, who had been involved in fatal crashes in the past 11 years. We used the case-crossover design to analyse the protective effect of recent convictions on individual drivers.

Findings 8975 licensed drivers had fatal crashes during the study period. 21 501 driving convictions were recorded for all drivers from the date of obtaining a full licence to the date of fatal crash, equivalent to about one conviction per driver every 5 years. The risk of a fatal crash in the month after a conviction was about 35% lower than in a comparable month with no conviction for the same driver (95% CI 20–45, p=0·0002). The benefit lessened substantially by 2 months and was not significant by 3–4 months. The benefit was not altered by age, previous convictions, and other personal characteristics; was greater for speeding violations with penalty points than speeding violations without points; was no different for crashes of differing severity; and was not seen in drivers whose licences were suspended.

Interpretation Traffic-law enforcement effectively reduces the frequency of fatal motor-vehicle crashes in countries with high rates of motor-vehicle use. Inconsistent enforcement, therefore, may contribute to thousands of deaths each year worldwide.

Lancet 2003; **361**: 2177–82
See Commentary

Department of Medicine, University of Toronto, Clinical Epidemiology and Health Care Research Program, Sunnybrook and Women's College Health Sciences Centre, and Institute for Clinical Evaluative Sciences in Ontario, Toronto, ON, Canada (Prof D A Redelmeier MD); **Departments of Statistics and of Health Research and Policy, Stanford University, Stanford, CA, USA** (Prof R J Tibshirani PhD); **and Science Serving Society, Bloomfield Hills, MI, USA** (L Evans DPhil)

Correspondence to: Prof Donald A Redelmeier, Sunnybrook and Women's College Health Sciences Centre, G-151, 2075 Bayview Avenue, Toronto, ON, Canada M4N 3M5 (e-mail: dar@ices.on.ca)

Introduction

Motor-vehicle crashes are a common cause of death, disability, and demand for emergency medical care. Globally, about 1 million people die each year from traffic crashes and about 25 million are permanently disabled.[1] Unlike many common diseases, the victims are frequently young and need substantial related care for decades. Most crashes are unintended, unexpected, and could have been prevented by small differences in driver behaviour.[2] Prevention is particularly important for protecting health, given that most drivers will be in at least one crash during their lifetime. Moreover, about half of all crash deaths occur at the scene, with no opportunity for life-saving treatment.[3]

An individual's crash risk depends on how that person drives and how other road users behave,[4] yet the public is somewhat sceptical about traffic-law enforcement.[5,6] News exposés and the entertainment industry have suggested some law-enforcement efforts are merely revenue generating in locations with low crash rates, done by biased officers.[7] Any balance between safety and mobility involves trade-offs, and people generally resist efforts that interfere with their driving.[8] Police, themselves, sometimes view traffic enforcement as a duty beneath their skills.[9] Furthermore, the effectiveness of most laws has not undergone scientific scrutiny, and the few available studies are mostly ecological analyses using disputable before-and-after comparisons of intermediate outcomes (adherence) rather than definitive outcomes (death).[10,11]

Rigorous testing of the effectiveness of traffic enforcement for preventing deaths might contribute to better decisions. First, testing could check the popular claim that enforcement yields no lives saved and a contrary net increase in crashes because drivers watch for police instead of hazards[12] would be useful. Second, testing could help to assess the effect of allocation of scarce police resources to traffic safety compared with other community services, and also affect attitudes about charging.[13] Third, results could raise debate on adoption of new enforcement technologies such as photo radar and red-light cameras.[14,15] A shortage of data may underlie inconsistency in enforcement practices globally, which could indirectly contribute to hundreds of preventable deaths each day.[16]

Methods

Setting

Ontario, Canada, in 1993—the study mid point—had a population of about 9·6 million people and 6·8 million drivers; 0·4 million drivers were involved in crashes, and there were 1135 crash deaths.[17] Police were responsible for 6·0 million licensed vehicles, 20 000 km of roads, and 1·0 million traffic convictions, but used no special enforcement technologies.[18] Licences were graduated for the first 2 years of driving (restrictions on highway

ATTACHMENT 1

driving and other limitations), and general licences could be suspended after accumulation of nine penalty points (the annual rate of suspension was about 0·6% of drivers). A conviction for speeding at 20 km per h higher than the limit, for example, involved a Can$100 fine (around UK£42) and three penalty points. Ontario had no programmes for dismissing convictions if a person completed a driver improvement course.

Drivers and driving records

We identified all drivers involved in fatal crashes between Jan 1, 1988, and Jan 1, 1999, in Ontario. A fatal crash was defined as causing death of any person at the scene, on arrival at hospital, or within 1 month of the event. We included drivers irrespective of whether they survived, were at fault, or held special diplomatic immunity from prosecution. We excluded drivers who were unidentified by police, whose licences were not registered in Ontario, or who had held licences for less than 2 years, because of graduated licence restrictions. Duplicate records were deleted if they showed identical time, place, and driver. The primary analyses focused on drivers whose driving permit was maintained during the study period; we assessed drivers whose permits were suspended in secondary analyses.

Ontario drivers' records were traceable to individual-driver level and accessible for research purposes.[17,18] Such research did not require voluntary consent and covered a person's full driving record. These databases were identical to the official files on drivers, serious crashes, and traffic convictions. Individual convictions could be removed from the public record after 2 years, but were not erased from computer files; hence, drivers' lifetime histories were available for analysis. The available data did not include parking violations or driving violations on roads outside Ontario. Similarly, the information on the date of obtaining a full licence reflected Ontario residency and did not include earlier licences elsewhere.

Records were linked by use of the encrypted licence number to data on the person, vehicle, and roadway conditions, with the following stipulations. Age, years of licensed driving, and previous convictions were current on the day of the crash. Licence class was simplified to the highest certification for people holding multiple licences. Data on alcohol were based on police reports, and missing values were coded as negative. Vehicles were classified as car, truck, or other because of small numbers of specific types. Road surface conditions were classified as dry, wet, or snowy (including ice, sleet, slush, and similar winter conditions). Crash locations were described as related or unrelated to an intersection, as recorded in the police report.

Analysis

We analysed convictions by use of a case-crossover design, a technique for assessing a temporary change in risk associated with a transient exposure.[19] Each person was his or her own control and thereby eliminated confounding due to all fixed characteristics, including genetics, personality, education, lifestyle, and chronic diseases.[20] The primary analysis used a pair-matched analytical approach to contrast a period immediately before the crash with a comparable period substantially before the crash.[21] This analysis would identify a safety benefit if periods with convictions were followed by fewer crashes than would be expected due to chance. Therefore, a benefit is implied if the absence of a conviction is associated with the onset of a crash.

In the primary analysis we assessed licensed drivers and compared the month immediately before the crash with the same month 1 year before. For example, for a crash on July 1, 1995, we compared the month of June, 1995, with June, 1994. Supplementary analyses compared the same immediate previous period to five alternative control periods to check the robustness of our findings: with the month 11 months previously, 13 months previously, 24 months previously, 36 months previously, or an extended full-year span centred 12 months previously. For example, we compared the control month of June, 1994, with July, 1994, May, 1994, June, 1993, June, 1992, and the 1-year period with July 1, 1994, as the central date. We repeated the analysis for suspended drivers to test whether smaller safety benefits were observed where smaller safety benefits would be anticipated.[22,23]

We assessed further issues by stratification. The first approach relied on grouping drivers by personal characteristics or crash features and testing for discrepancies across major subgroups. We analysed crash severity by two separate methods. First, fatal crashes were investigated by police who estimated the damage to drivers' vehicles. Second, a fatal crash did not always kill all persons involved and we assessed benefits among drivers who survived admission to hospital, were discharged into the community, and returned to active driving by analysis of their driving records after the crash. In addition, we explored how long a potential association might persist, denoted as a persistence analysis, by examining hazard intervals shifted progressively backward in time from the crash day (with corresponding displacements of control intervals). For

	Number (% [n=8975])
Characteristics	
Age (years)*†	
<30	2229 (25)
30–50	3921 (44)
>50	2800 (31)
Sex	
Male	6512 (73)
Female	2463 (27)
Years of licensed driving*†	
≤9	4032 (45)
≥10	4918 (55)
Corrective eyewear	
Yes	3224 (36)
No	5751 (64)
Licence class	
General	7110 (79)
Advanced‡	1865 (21)
Previous driving convictions*	
≤3	6853 (76)
≥4	2122 (24)
Alcohol detected	
Yes	634 (7)
No	8341 (93)
Road surface condition	
Dry	5822 (65)
Wet	1636 (18)
Snowy	1517 (17)
Road configuration	
Intersection	2836 (32)
Non-intersection	6139 (68)
Vehicle type	
Car	5689 (63)
Truck§	2649 (30)
Other¶	637 (7)

*Updated to time of fatal crash. †Excludes 25 drivers with missing birth dates. ‡Includes permits for motorcycles, trucks, and special vehicles. §Includes passenger vans or sports utility vehicles (n=605) and delivery vans (n=165). ¶Includes motorcyles (n=227), buses (n=137), bicycles (n=58), and 17 other types (n=215).

Table 1: **Selected characteristics of drivers and crashes**

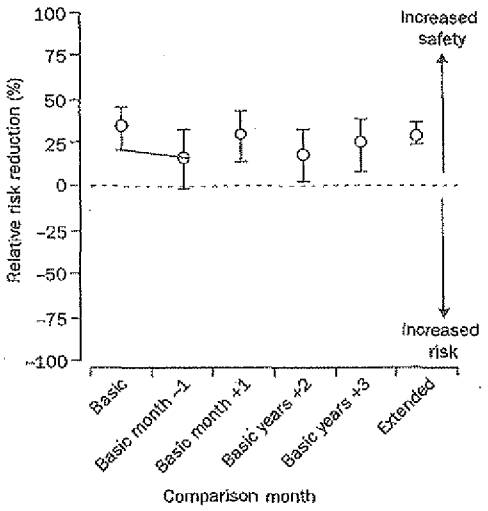


Figure 1: **Estimated relative risks (95% CI) for six different control intervals**

Basic=1-month control periods before collision separated by 12 months. Basic -1 month=separation of 11 months. Basic +1 month=separation of 13 months. Basic +2 years=separation of 24 months. Basic +3 years=separation of 36 months. Extended=1-year control period centred on date 12 months before collision.

example, a 1-month persistence interval would include May 1994 and May 1995 when assessing a crash on July 1, 1995.

Statistical analysis

We calculated the sample size to provide an 80% chance of detecting a 15% increase or decrease in crash rates. Relative risks were estimated with methods for matched-pairs studies on the basis of exact binomial tests and conditional logistic regression. Analogous methods were applied when the control interval was 12 months rather than 1 month in length. In all analyses, the time immediately before the crash was 1 month in length (estimates based on intervals of 2, 6, and 8 weeks yielded similar results and are not shown). Each month before the fatal crash was assessed as an independent hazard time period. All p values were two-tailed, all relative risks calculated with 95% CI, all analyses drawn from all data available. Relative risk reductions greater than zero show a safety benefit, and CI that exclude zero are significant. We did all analyses on S-PLUS (version 3.4) and Statview (version 5.0) software.

Role of the funding source

The study sponsors had no role in the study design, data collection, data analysis, data interpretation, the writing of the report, or in the decision to submit the paper for publication.

Results

8975 licensed drivers were involved in fatal crashes during the 11-year study period. In addition, 4861 suspended drivers were involved in fatal crashes. Data on convictions showed no anomalous entries or gaps related to licence numbers or to date, description, and demerit points for each offence. Data on crashes also showed no irregularities over the critical data on drivers' licence numbers and dates. Data on sex, licence class, road surface, road configuration, and vehicle type had no irregularities. Data on corrective eyewear and alcohol consumption were assumed complete with missing values interpreted as negative. Data on previous convictions were derived directly from the file of each individual. Data on birth date and first licensing date were missing for 25 individuals; these individuals appear in the primary analysis but are excluded from the subanalyses of driver age and experience.

The typical licensed driver was a man aged 43 years holding a general permit, and who drove a car in dry road conditions (table 1). Most of the crashes did not involve alcohol and were not at intersections. Before the crashes, the lifetime driving-conviction history of the entire group of licensed drivers accounted for 21 501 convictions, most commonly for speeding without penalty points (6682 convictions) or speeding with penalty points (6493 convictions). There was a notable seasonal pattern; crashes and convictions were more common in the summer than the winter.

135 licensed drivers had had driving convictions in the month before the fatal crash, 204 had had convictions in the same month 1 year before, and six had had convictions in both months. The primary analysis indicated that convictions were associated with a 35% reduction in the relative risk of a crash (95% CI 20–45, p=0·0002). Analyses based on alternative control time periods yielded similar findings (figure 1). As expected, the analysis of the extended control time of 1 year resulted in a minor drift of the point estimate and narrowing of the CI. For suspended drivers, however, there was no significant decrease in risk associated with

	Number with conviction in previous month	Relative risk reduction (95% CI)*
Complete cohort	135	35 (20 to 45)
Age (years)		
<30	58	34 (10 to 52)
30–50	62	28 (2 to 48)
>50	15	55 (13 to 75)
Sex		
Male	111	37 (20 to 50)
Female	24	19 (-47 to 50)
Years of licensed driving†		
≤9	66	39 (17 to 54)
≥10	69	30 (6 to 48)
Corrective eyewear		
Yes	47	26 (-6 to 48)
No	88	39 (20 to 52)
Licence class		
General	104	32 (13 to 45)
Advanced	31	42 (10 to 61)
Previous driving convictions		
≤3	64	33 (10 to 50)
≥4	71	37 (17 to 52)
Alcohol detected		
Yes	15	42 (-15 to 68)
No	120	34 (17 to 48)
Road surface condition		
Dry	90	35 (17 to 50)
Wet	25	31 (-15 to 57)
Snowy	20	38 (-15 to 62)
Road configuration		
Intersection	31	48 (20 to 64)
Non-intersection	104	29 (10 to 43)
Vehicle type		
Car	83	26 (2 to 43)
Truck	42	47 (23 to 62)
Other	10	36 (-54 to 70)

*Indicates decrease in chance of a fatal crash during month after conviction compared with month after no conviction. †Positive values indicate increased safety, negative values indicate increased risk.

Table 2: **Relative reduction in crash risk associated with a conviction**

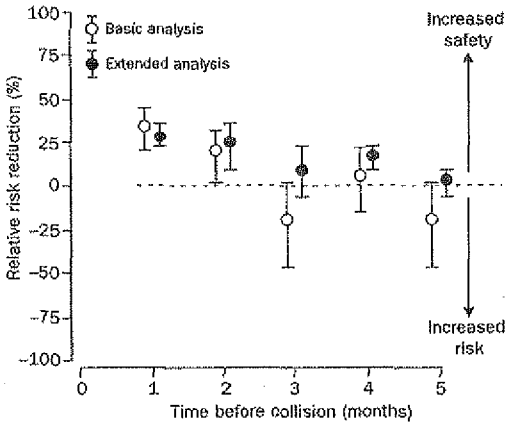


Figure 2: **Relative risks (95% CI) for different persistence intervals**

Basic analysis=1-month control periods before collision separated by 12 months. Extended analysis=1-year control period centered on date 12 months before collision.

convictions (relative risk reduction −16% [−36 to 2], p=0·12).

The relative risk reduction associated with traffic convictions was consistent among subgroups of licensed drivers. In no group were traffic convictions associated with a harmful effect (table 2). The smallest relative risk reduction was for women, although the inconsistency between women and men was not significant (p=0·39) and women were generally under-represented in fatal crashes. The relative risk reduction was almost the same for drivers with four or more and for those with three or fewer previous convictions and almost the same for drivers with alcohol and with no alcohol detected by police. Analyses of each of the 11 separate years showed

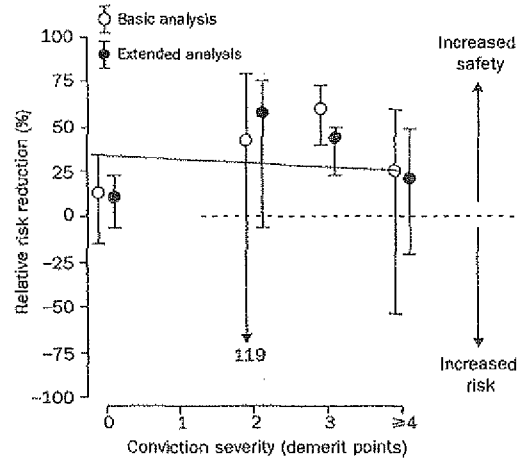


Figure 3: **Relative risks (95% CI) for different types of convictions**

Basic analysis=1-month control periods before collision separated by 12 months. Extended analysis=1-year control period centered on date 12 months before collision. Drivers with no convictions excluded. Relative risks undefined at severity=1 because no driver accumulated exactly 1 point, and do not increase proportionately with conviction severity.

a relative risk reduction in all but 1 year and no significant increasing or decreasing trends.

The decrease in risk was greatest for convictions made close to the time of the crash. In the analysis of persistence of effect, for control periods of 1 month's duration the decrease in risk was greatest for convictions made less than 1 month before the crash and was not significant for convictions made 3 or more months before the crash (figure 2). The same analysis with control periods of 12 months' duration indicated that a decrease in risk did not persist for convictions 5 or more months into the past. In no analysis did we find a significant increase in risk. In addition, we found a consistent relative risk reduction after convictions, irrespective of hour of day (range 24–55%), day of week (24–53%), or season of year of the crash (17–52%).

Analysis of crashes according to police estimates of damage, showed marginally inconsistent higher relative risk reduction for drivers whose vehicles were demolished compared with those whose were not (42 *vs* 23%, p=0·22). Relative risk reductions were similar for drivers who did or did not have objective evidence of subsequent driving activity (35 *vs* 34%, p=0·95). Together these findings suggest that safety benefits extended to crashes of greater or lesser severity.

In the subgroups of convictions, speeding convictions in which the driver received penalty points were associated with a larger relative risk reduction than speeding convictions with no penalty points (51 *vs* 0%, p=0·011). Convictions related to administrative errors, careless driving, seatbelt failure, and disobeying of a traffic signal were all associated with similar relative risk reductions (range 31–57%). When based on severity of punishment rather than the type of offence, convictions for which two to three penalty points were awarded showed generally more safety benefit than did convictions with no penalty points (figure 3).

We tested for adverse effects related to enforcement by review of coroners' data on all deaths involving police activity. We found 24 deaths related to traffic enforcement during the study period. These deaths included 17 drivers suspected of criminal activity, five bystanders, and two police officers. The typical driver who died was a man aged 26 years pursued by police after fleeing a spot check for alcohol or a speeding violation. Four of the five bystanders were passengers in a vehicle fleeing a spot check, four had positive toxicology at autopsy (alcohol or illicit drugs), and four were teenagers. The two police officers who died (separate events) were each hit by drivers while writing a speeding ticket for another motorist.

Discussion

Almost no driver wants to be in a serious crash, yet almost all drivers violate traffic laws at some time, such as by intermittent speeding.[24] We studied more than 10 million people for longer than a decade and found that convicting drivers for traffic offences reduces the rate of fatal crashes. Each conviction leads to a 35% decrease in the relative risk of death over the next month for drivers and other road users; conversely, each conviction not issued would lead to a corresponding increase in risk. Our findings also imply that increasing the frequency of traffic enforcement might further reduce total deaths, that emphasis of moderate penalties (around three points) is useful, and that past procedures led to some deaths that might not have otherwise occurred.

Our findings extend past research because the individual rather than the region is the unit of analysis

and because each person is their own control rather than using statistical models to adjust for confounding. A meta-analysis of past ecological data implied a 2% risk reduction from manual speed enforcement, a 19% reduction from automated speed enforcement, an 11% reduction from red-light violation enforcement, and a 4% reduction from enforcement of drink-driving laws.[25] The results of individual reports varied even more, presumably because of difficulties in separating the effects of enforcement from publicity campaigns, fallible implementation, statistical artifact, and unmeasured ecological bias.

The major impediment to general traffic-law enforcement is a lack of public support. Unlike when receiving preventive health care, individuals commonly resist convictions with deception or argument.[25,26] Enforcement can reduce civil liberties, disrupt traffic flow, restrict mobility, or have other unintended consequences on quality of life and economic prosperity. Enforcement strategies are also inconsistent, since many drivers have violations, but few are apprehended, and even fewer have malicious intent.[7] Finally, police resources are scarce and apprehending other types of offenders may be a higher societal priority because one murder may draw more attention than the thousands killed daily in motor-vehicle crashes worldwide.

Traffic enforcement has potential indirect effects on health of uncertain importance. A road-safety programme may intercept other unlawful activity because criminals frequently drive to and from their illegal operations, including the traffic of illicit drugs. Visible police presence might deter violent behaviour or stop repeat offenders; for example, the convicted Oklahoma City bomber was apprehended at an incidental traffic stop. In addition, crashes are an economic drain on society—costs are about US$200 billion yearly in the USA[27]—that the public cannot escape because of insurance premiums or other market forces, and that ultimately decreases the funding available for medical care.

Our research has limitations. The intermittent nature of driving and the potential for out-of-region activity leads to spurious positive correlations in case-crossover analysis and causes us to underestimate the risk reduction. Selection bias may cause further underestimation because enforcement targets drivers who are predisposed to crashes and thereby may further obscure potential protective associations.[20,28] Our estimates do not imply that every conviction is effective and do not predict how results might change at extremes of enforcement or with cultural adaptation. Finally, we once more raise the issue of hard-core problem drivers, who drive despite having suspended licences, but we can provide no headway on this issue.[29]

Our research is prone to misinterpretation. We have not assessed other deterrents, such as being charged but not convicted, being stopped but not charged, or being an observer when others are stopped. We have not definitively proved causality, yet a randomised experiment of individual drivers would be very difficult. We have not shown that traffic-law enforcement is the only way to reduce motor-vehicle deaths since gains may also be possible through advances in information, incentives, technology, or culture. We have not tested highly specific questions about road safety because we have limited statistical power and imperfect direct data on alcohol or other disturbances, as is typical in studies of human behaviour.

Our data suggest that about one death is prevented for every 80 000 convictions, one emergency department visit for every 1300 convictions (assuming the benefits apply to crashes of all severity), and $1000 in societal costs for every 13 convictions (including property damage and lost time). The observed 35% relative risk reduction in death is greater in magnitude than the roughly 20% relative risk reduction from all mandatory vehicle improvements of the past 50 years, yet enforcement effects are transient.[5,10] Policies of more frequent enforcement could yield more net savings and could also be revenue neutral if designed efficiently. A small relative risk reduction could immediately prevent a large amount of death, disability, and health-care demands.

Contributors

All researchers contributed to the design, analysis, and reporting of this research. D Redelmeier had full access to all of the data in the study, and bears final responsibility for mistakes.

Conflict of interest statement

D Redelmeier draws income from medical practice at Canada's largest trauma centre, Sunnybrook and Women's. R Tibshirani draws earnings as a member of the advisory board of several companies, none of which is involved in traffic safety. Leonard Evans draws a pension from the General Motors Corporation and has earnings from writing, speaking, and consulting on matters related to traffic safety.

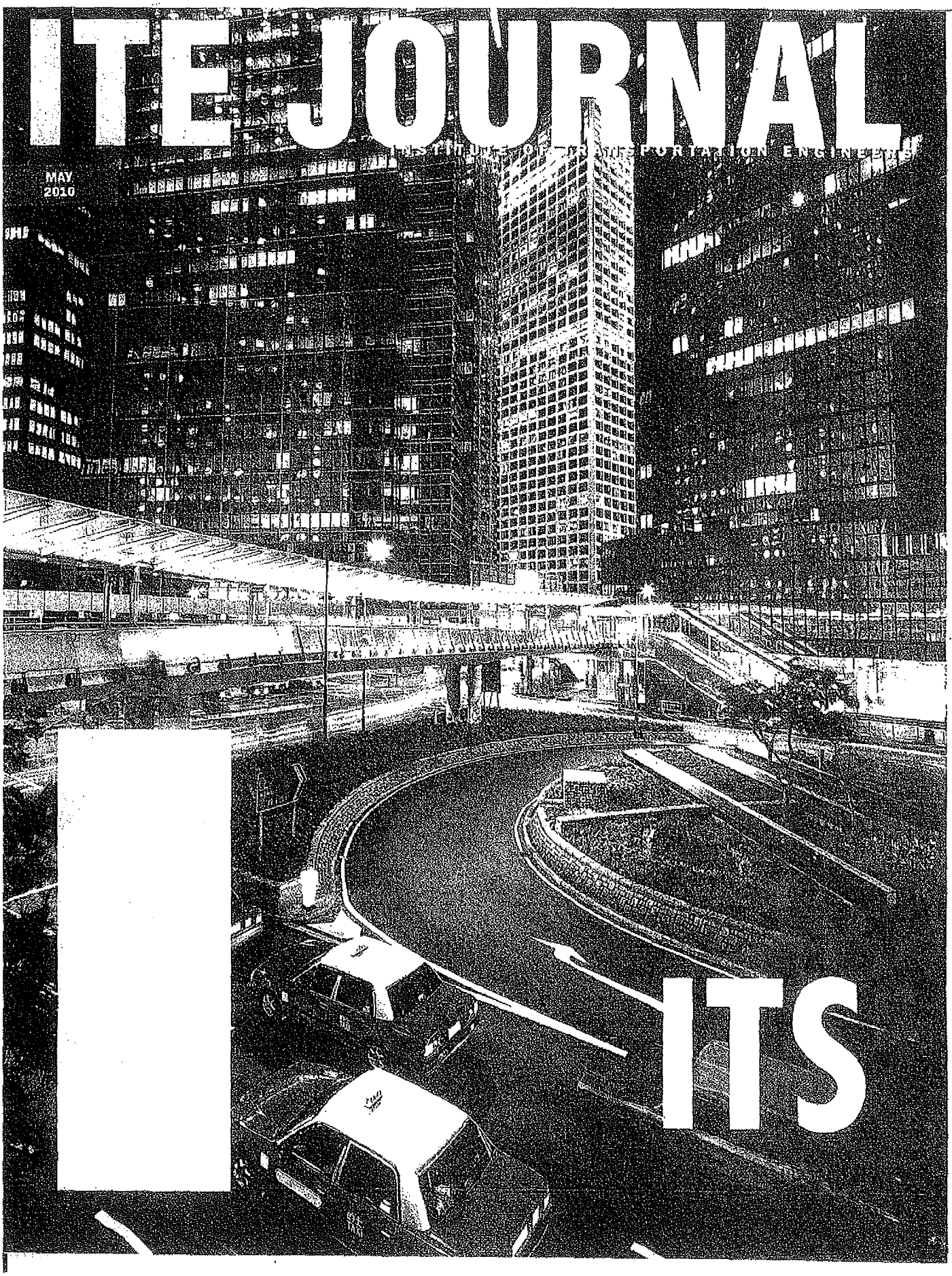
Acknowledgments

This research was funded by a grant from the Canadian Institutes for Health Research, a Career Scientist Award from the Ontario Ministry of Health, and the de Souza Chair in Trauma Research at the University of Toronto. We thank the Ministry of Transportation and the Ontario Coroner's Office for their help, and Joanne Banfield, Chaim Bell, Fred Brenneman, Shereen Ezzat, David Juurlink, Barry McLellan, Lee Ross, David Sackett, Philip Shuchman, Steven Shumak, and Matthew Stanbrook for comments on drafts of the report.

References

1 Krug E, ed. Injury: a leading cause of the global burden of disease. Geneva: World Health Organization, 1999.
2 McFarlane RA, Moore RC. Human factors in highway safety: a review and evaluation. *N Engl J Med* 1957; 256: 792–99.
3 Evans L. Traffic safety and the driver. New York: Van Nostrand, 1991: 311.
4 Treat JR. A study of precrash factors involved in traffic accidents. Ann Arbor, MI: HSRI Research Review, May–August, 1980.
5 Evans L. A new traffic safety vision for the United States. *Am J Public Health* (in press).
6 Tyler TR. Citizen discontent with legal procedures: a social science perspective on civil procedure reform. *Am J Comparative Law* 1997; 45: 871–904.
7 Soderstrom CA, DuPriest RW, Maekawa K, Khaneja SC. Speeding. *N Engl J Med* 1977; 297: 1356.
8 Graham JD. Auto safety: assessing America's performance. Dover, MA, USA: Auburn House, 1989.
9 Jonah B, Yuen L, Au-Yeung B, et al. Front-line police officers' practices, perceptions, and attitudes about the enforcement of impaired driving laws in Canada. *Accid Anal Prev* 1999; 31: 421–43.
10 Min ST, Redelmeier DA. Car phones and car crashes: an ecologic analysis. *Can J Public Health* 1998; 89: 157–61.
11 National Highway Traffic Safety Administration. National aggressive driving action guide: a criminal justice approach. Washington, DC: US Department of Transportation (DOT HS 809 351), 2001.
12 Sinek J. Safety, even if it kills you. *World of Wheels* 2002; 20: 4.
13 Rehm CG, Nelson J, MacKenzie D, Ross SE. Failure of the legal system to enforce drunk driving legislation effectively. *Ann Emerg Med* 1993; 22: 1295–97.
14 Retting RA, Ferguson SA, Hakkert SA. Effects of red light cameras on violations and crashes: A review of the international literature. *Traffic Injury Prev* 2003; 4: 17–23.
15 Insurance Institute for Highway Safety. Special issue on automated enforcement. *Status Report* 2002; 37: 2–7.
16 Boyle J, Dienstfrey S, Sothoron A. National survey of speeding and other unsafe driving actions. Washington, DC: National Highway Traffic Safety Administration (DTNH22-95-C-05096), 1998.

17 Ontario Ministry of Transportation. Ontario road safety annual report 1993. Toronto: Queen's Printer for Ontario, 1994.
18 Ministry of Transportation. http://www.mto.gov.on.ca/ (accessed April 17, 2003).
19 Maclure M, Mittleman MA. Should we use a case-crossover design? *Annu Rev Public Health* 2000; 21: 193–221.
20 Redelmeier DA, Tibshirani RJ. Interpretation and bias in case-crossover studies. *J Clin Epidemiol* 1997; 50: 1281–87.
21 Mittleman MA, Maclure M, Robins JM. Control sampling strategies for case-crossover studies: An assessment of relative efficiency. *Am J Epidemiol* 1995; 142: 91–98.
22 Sorock GS, Lombardi DA, Gabel CL, Smith GS, Mittleman MA. Case-crossover studies of occupational trauma: methodologic caveats. *Injury Prev* 2001; 7: 138–42.
23 Foley JP, Fricker JD. Penalizing recidivist drunk drivers in Indiana: impediments to implementation. *Accid Anal Prev* 1987; 19: 479–86.
24 National Highway Traffic Safety Administration. National survey of speeding and other unsafe driving actions, vol II: driver attitudes and behavior. Washington, DC: National Highway Safety Administration (DOT HS 808 749), 1998.
25 Enhanced safety coming from appropriate police enforcement. http://www.vtt.fi/rte/projects/escape/index.htm (accessed April 17, 2003).
26 Austin RH. Political risk assessment, from an elected safety belt law advocate's point of view and experience. *J Trauma* 1987; 27: 719–25.
27 Blincoe L, Seay A, Zaloshnja E, et al. The economic impact of motor vehicle crashes, 2000. Washington DC: National Highway Traffic Safety Administration, 2002.
28 Daigneault G, Joly P, Frigon JY. Previous convictions or accidents and the risk of subsequent accidents of older drivers. *Accid Anal Prev* 2002; 34: 257–61.
29 Brewer RD, Morris PD, Cole TB, Watkins S, Patetta MJ, Popkin C. The risk of dying in alcohol-related automobile crashes among habitual drunk drivers. *N Engl J Med* 1994; 331: 513–17.
30 Waller PF. Challenges in motor vehicle safety. *Annu Rev Public Health* 2002; 23: 93–113.



ATTACHMENT 2

Effectiveness of Red-Light Cameras

WITH RED-LIGHT RUNNING REMAINING ONE OF THE MOST CHALLENGING ENFORCEMENT JOBS, HOW EFFECTIVE ARE RED-LIGHT CAMERAS AT REDUCING THE RATE OF VIOLATIONS? AND EVEN MORE IMPORTANTLY, WHAT EFFECTS DO THEY HAVE ON THE LEVEL AND SEVERITY OF INTERSECTION-RELATED CRASHES? THIS PAPER EXAMINES THE POTENTIAL BENEFITS AND DRAWBACKS OF RED-LIGHT CAMERAS.

BY BRIAN BOCHNER, P.E., PTOE, PTP
AND TROY WALDEN, PH.D.

BACKGROUND

Intersection traffic safety is achieved through a combination of engineering, education and enforcement. This paper addresses only the enforcement component through use of red-light cameras. A comprehensive discussion about the engineering component of signal lights can be found in the *Red-Light Running Handbook: An Engineer's Guide to Reducing Red-Light-Related Crashes.*[1]

Red-light cameras have been used increasingly over the past decade to assist and facilitate enforcement against red-light running at signalized intersections. According to the Insurance Institute for Highway Safety (IIHS), red-light cameras are in use by more than 400 cities in the United States and in at least 22 countries.[2,3]

This paper summarizes the following:

- The purpose of enforcement against red-light running violations;
- Findings from evaluations of the effectiveness of red-light cameras; and
- Conclusions regarding the use of red-light cameras to increase driver adherence to traffic signals.

PURPOSE OF ENFORCEMENT AGAINST RED-LIGHT RUNNING

Enforcement against red-light running violations is an action intended to increase safety by reducing the number of crashes and vehicle conflicts at signalized intersections. An analysis of 1997 U.S. crash data indicated that red-light running crashes accounted for 44 percent of all fatalities at signalized intersections.[4] The city of Toronto, Ontario, Canada, attributes as much as 40 percent of fatalities at its signalized intersections to red-light running.[5] Similarly, statewide in Iowa, about 35 percent of fatal/major injury crashes at signalized intersections between 2001 and 2006 were attributed to red-light running.[6] To understand the importance of enforcement, it is first necessary to understand the safety reasons for which intersections are signalized in the first place.

Purpose of Traffic Signals

Traffic signals are used to assign the right of way to vehicles passing through intersections so conflicting movements (i.e., vehicle paths that cross each other and create crash potential) do not occur. Traffic signals are installed when traffic engineering studies determine that certain conditions (warrants) are met in accordance with the *Manual on Uniform Traffic Control Devices* (MUTCD).[7] Most of the warrants are directly or indirectly associated with preventing conflicts and crashes.

Relationships Between Red-Light Running Violations and Crash Frequency, Severity and Vehicle Conflicts

Traffic signals are installed to separate conflicting traffic movements (called conflicts) through intersections. Those conflicts create crash potential. For example, if a vehicle from each of two crossing streets attempts to enter an intersection at the same time, the paths of the crossing vehicles meet in the intersection and a crash can occur. Figure 1 illustrates the vehicle conflict points that occur within a typical intersection.

Crashes occur when conflicting vehicle movements occur within intersections. Research has shown that the more traffic conflicts that occur, the higher the frequency of crashes. But there is more to the problem of conflicts than just crash frequency. There are different degrees of crash severity. These are most simply characterized as property damage only, injury and fatal crashes. Certain crash types produce a higher degree of severity than others. The two most frequent types of crashes at signalized intersections are angle (vehicle paths from intersecting streets cross each other) and rear-end (one vehicle collides with the vehicle in front of it). Right-angle crashes usually have a higher (more serious) severity than rear-end crashes.

Conflicts lead to crashes. Certain types of crashes produce more serious results. No crash is a good crash, and traffic signals are installed to help prevent conflicts and crashes. Red-light running violations, in addition to being prohibited by state law, are

dangerous to public health and safety. Enforcement of red-light running violations is intended to reduce crashes by reducing vehicle conflicts within intersections.

Purpose of Red-Light Camera Enforcement

Most drivers obey traffic signals all the time. However, some drivers, due to temporary inattention, distractions, poor decision making, or aggressive driving fail to stop for red lights. Those red-light-violating drivers create crash opportunities at the conflict locations shown in Figure 1.

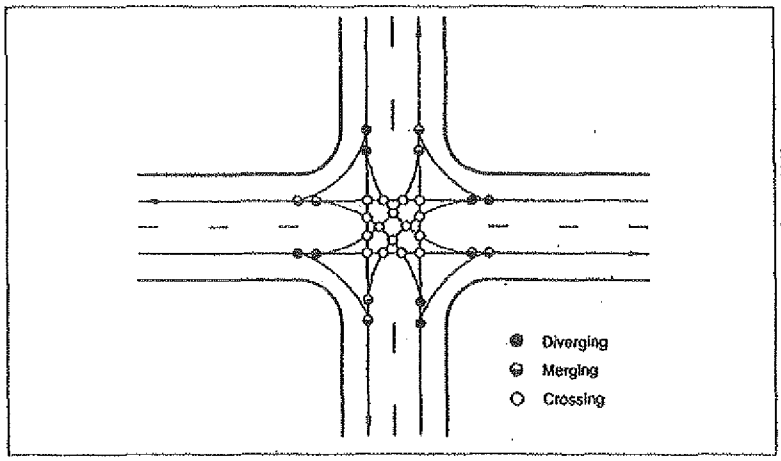
Traffic engineers seek ways to increase compliance with traffic signals at locations where red-light running is higher than normal. Sometimes engineering countermeasures can be used, such as changing signal phasing or timing or modifying signal displays. However, often the problem is driver decision making, and enforcement becomes necessary. The traditional method of enforcement is for police officers to cite violators they observe. This requires police officers to spend their time on the streets and results in an occasional enforcement presence. It also requires police officer time away from other duties.

Red-light cameras were invented to provide more comprehensive enforcement without diverting police officers from other, possibly more important, duties. They are typically used where crashes or violations (which create crash potential) are most frequent. However, they can be used at any signalized intersection. Red-light cameras are normally installed after a traffic engineering evaluation shows that all reasonable and applicable engineering countermeasures have been evaluated and that violations still exist. One advantage of red-light cameras is that they provide continuous coverage and produce a record of the violations that can be reviewed in case of question.

Hence, enforcement by use of red-light cameras is for the purpose of reducing vehicle conflicts and crashes in intersections that experience red-light running violations.

EFFECTIVENESS OF RED-LIGHT CAMERAS

The effectiveness of red-light cameras can be viewed in terms of reductions in crash frequency, crash severity and frequency of red-light running violations. This section provides a cross-section of past findings about the effectiveness of red-light cameras in affecting those three results. It should be noted that, unless otherwise stated, the authors of this summary drew the information from published or Internet summaries and did not have access to the actual data. It also should be noted that many results are based on observations of small numbers of intersections for varying periods and that the intersections may have been selected for red-light camera application based on a variety of existing conditions. Therefore, readers are encouraged to consider general trends and consistency rather than to try to calculate average magnitudes of effectiveness.



Lee Rodegerdts et al, *Signalized Intersections: Informational Guide*, Federal Highway Administration, Washington, DC, August 2004.

Figure 1. Traffic conflict points in a typical intersection.

Crash Frequency

Crash frequency is usually measured in total crashes per year. Some reports separate crashes by whether or not they relate to red-light running or by crash type, usually right-angle or rear-end types.

Crashes at signalized intersections. When a traffic signal is originally installed, one purpose is to reduce right-angle crashes if they make up an inordinately high percentage of the total. It is expected that rear-end crashes may increase if drivers stopping on red are followed too closely by subsequent drivers.

Impact of red-light camera enforcement. Red-light running enforcement is expected to reduce right-angle collisions by virtue of reducing improper entry to the intersection when crossing vehicles are present. At the same time, the additional vehicles stopping when red-light cameras are present may result in an increase in rear-end crashes (or they may not, since drivers should be more cautious and expect drivers in front of them to stop for red).

Numerous studies have been completed to assess the impact of red-light camera enforcement on crash frequency. The examples cited here are before-and-after comparisons at intersections (the only change is the addition of red-light cameras). These provide a good assessment of the impact of red-light cameras since all other factors remain the same. It is assumed that the traffic volumes remain about the same since most data cover 1-2 years before and after installation—in most cases this is rarely enough time for traffic volumes to change significantly.

In one of the most procedurally robust evaluations of red-light camera effectiveness, researchers evaluated 132 sites in seven jurisdictions.[8] Findings included the following:

- Right-angle crashes were reduced by approximately 25 percent overall. Right-angle crashes were reduced by an average of 14 to 40 percent in six of the seven jurisdictions; in one jurisdiction those crashes increased by about 1 percent. Right-angle crashes declined by about 8 percent at other signalized intersections without red-light cameras in the same jurisdictions, indicating that the use of the cameras may produce some effect across the area.

- Rear-end crashes increased in all seven jurisdictions by 7 to 38 percent. The average increase was about 15 percent. At signalized intersections without cameras, the spillover effect was that rear-end crashes increased by about 2 percent.
- The combined total of right-angle and rear-end crashes decreased by less than 1 percent. Total right-angle and rear-end injury crashes declined by about 5 percent.
- The percentage of the respective right-angle and rear-end crashes that resulted in injuries each stayed the same.

Unpublished summaries of Texas Crash Records Information System (CRIS) data for 56 red-light camera-equipped intersections in 10 Texas cities indicate that [9]

- Red-light related crashes decreased by about 17 percent. For red-light related crashes (those attributed to drivers running a red light), six intersections showed decreases, three had increases and one was unchanged. Among the four high-crash locations, three showed decreases and one increased.
- Right-angle crashes declined 18 percent. Right-angle crashes decreased from 67 percent of total crashes before cameras to about 55 percent of the total with camera enforcement.
- Rear-end crashes increased by 56 percent. Only 11 of the 70 (16 percent) rear-end crashes per year before cameras were related to red-light causes. With cameras, 15 of 109 (14 percent) rear-end crashes per year related to red-light causes. Although total rear-end crashes increased, red-light related causes contributed about the same percentage as before cameras.
- Total crashes were virtually unchanged. Total crashes increased at five intersections and decreased at five. Some intersections had very few crashes. However, even among those with more than 20 crashes per year, half showed increases and half showed decreases.

The city of Garland, Texas, USA, compiled 31 months each of before and after data for its six intersections having red-light cameras (one approach each).[10] Two of those intersections are at freeway frontage roads. After adjustment of all data to a monthly basis, the four arterial and one frontage road intersections experienced the following changes:

- Total crashes decreased about 29 percent.
- Red-light running crashes went down 60 percent at the two intersections (down 95 percent on approaches with cameras).
- Rear-end crashes increased by 45 percent.

At the second frontage road intersection, where total traffic increased by almost 50 percent in four years

- Total intersection crashes increased by about 64 percent.
- Red-light running crashes were more than three times as frequent.
- Rear-end crashes declined by about 57 percent (82 percent on camera-equipped approaches).
- Total injuries increased by 29 percent.

The city of Dallas, Texas, installed red-light cameras at 60 sites during the first half of 2007.[11] Preliminary results from data through the beginning of 2009 showed for 17 camera sites with two years implementation that

- Red-light running crashes decreased by an average of about 61 percent (all intersections showing reductions).
- Total crashes were down by 30 percent.

For the other 43 sites with 18 months in place

- Red-light running crashes were down an average of 39 percent (79 percent of intersections have reductions).
- Total crashes were down 23 percent.

Preliminary data obtained from the city of Irving, Texas, indicate that during the first 18 months of operation, red-light camera enforcement resulted in a reduction of total intersection crashes by 56 percent below the 18 months preceding implementation.[12]

IIHS evaluated results of red-light camera effectiveness in Oxnard, California, USA.[13] Eleven of Oxnard's 125 signalized intersections were equipped with red-light cameras. Results reported covered the effects of the cameras on all 125 intersections. They found that

- Total intersection crashes decreased by 7 percent.
- Right-angle crashes decreased by 32 percent.
- Injury crashes declined by about 29 percent.
- Rear-end crashes increased 3 percent.

There was no evaluation focused solely on the red-light camera intersections.

A study of 24 red-light camera intersections in Phoenix and neighboring Scottsdale, Arizona, USA, reported effectiveness of camera enforcement.[14] For 10 intersections in Phoenix

- Total intersection crashes were about unchanged.
- Angle crashes decreased by about 42 percent.
- Left-turn crashes were approximately unchanged.
- Rear-end crashes increased by about 20 percent.

For 14 intersections in Scottsdale

- Total crashes declined by about 11 percent.
- Angle crashes were down by about 20 percent.
- Left-turn crashes declined by about 45 percent.
- Rear-end crashes increased by about 41 percent.

An evaluation of effectiveness of six red-light camera intersections in Mesa, Arizona, another Phoenix area community, showed[15]

- The total crash rate decreased by about 10 percent.
- Half of the intersections experienced small increases in total crashes of 1 to 4 percent while half experienced large decreases (16 to 28 percent).

The same document showed that a North Carolina, USA, study of red-light camera effectiveness in Raleigh and Chapel Hill showed before-and-after comparisons (seven months of after data).

- Red-light related crashes declined by about 32 percent.
- Angle crashes decreased by about 51 percent.
- Total crashes were down by about 30 percent.
- Rear-end crashes increased by an average of about 2 percent.

The researchers cautioned that the seven months of after data might omit some seasonal effects.

The Howard County, Maryland, USA, Traffic Engineering Division reported early results, including that[16]

- Total crashes declined by between 21 and 44 percent at individual camera-enforced intersections.
- Right-angle collisions decreased by an average of 42 percent.
- Rear-end crashes deceased by an average of about 29 percent.

After 10 years of operation with up to 30 camera locations in Howard County[17]

- Total crashes had decreased by 12 to 18 percent (varied by length of service).
- Angle crashes decreased 36 to 57 percent (average 45 percent).
- Rear-end crashes ranged from a long-term 5 percent reduction to shorter-term increases of 2 to 10 percent.

An evaluation of red-light camera experience over 12 to 34 months at 12 intersections in San Diego, California, USA, showed that [18]

- Crashes attributable to red-light running decreased by about 41 percent.
- Rear-end crashes increased by about 37 percent. Rear-end crashes increased at 14 intersections and decreased at five.
- Total crashes increased by about 1 percent. Total crashes declined at 11 of the 19 intersections but increased at the others.
- Right-angle and ran-signal crashes decreased at 12 intersections but increased at two.

Some of the camera-equipped intersections in San Diego had very low crash experience to begin with. One intersection that had about 25 percent of the recorded red-light violations had only 1.5 crashes per year before camera installation. The report cited above referenced a report by the California state auditor that stated that following the introduction of the California red-light camera law

- Crashes attributable to red-light running declined statewide by about 3 percent per month and in cities with red-light cameras those crashes were down 10 percent per month.
- Only one California city showed an increase in red-light running crashes (5 percent).

Finally, the same source stated that following suspension of the San Diego red-light camera program, red-light crashes increased by 14 percent citywide and by 30 percent at former camera intersections.

An evaluation of four to six red-light camera intersections in San Francisco, California, USA, used five years each of before-and-after crash data. The evaluation showed that[19]

- Injury crashes decreased by about 9 percent.
- Faralities were 50 percent lower (although the numbers are small).

The same source reported that for 17 red-light camera intersections in Baltimore County, Maryland, USA, a comparison of one-year before-and-after crash data showed that

- Total intersection-related crashes decreased by about 57 percent, with 14 intersections experiencing decreases and three experiencing increases.
- Red-light-related crashes decreased by about 21 percent (six intersections decreased, four increased, seven unchanged)
- Injury crashes decreased by about 49 percent (10 intersections had decreases, four had increases, three were unchanged).

The same source also reported an evaluation of Charlotte, North Carolina, USA, experience for 17 red-light camera intersections. There the results were as follows:

- Total intersection crashes were unchanged (10 intersections decreased, seven increased).
- Angle crashes declined by about 37 percent (13 intersections decreased, three increased, one was unchanged).
- Rear-end crashes increased by about 16 percent (six intersections decreased, 10 increased, one unchanged).

On approaches equipped with cameras

- Total crashes decreased about 19 percent (12 approaches decreased, five increased).
- Angle crashed declined by about 60 percent (14 approaches decreased, two increased, one unchanged).
- Rear-end crashes increased by about 4 percent (five approaches decreased, 10 increased, two unchanged).

A report on red-light camera effectiveness in some cities in Georgia, USA, indicated a variety of results from various cities.[20] That report focused on total and rear-end crashes.

- In Rome, where one red-light camera was installed the first year
  - Total crashes decreased by 14 percent.
  - Rear-end crashes decreased by 32 percent.
- In Brunswick (three locations)
  - Rear-end crashes increased by about 70 percent.
- One installation in Duluth showed no clear trend.
- In Snellville, results for two locations showed that
  - Total crashes declined 43 percent at one intersection and increased 2 percent at the other one.
  - Rear-end crashes decreased 36 percent at one and increased 25 percent at the other.
- In Alpharetta, results for two locations showed that
  - Total crashes decreased by about 5 percent.
  - Rear-end crashes increased about 4 percent.

In Seattle, Washington, USA, where red-light cameras were installed on six approaches of four intersections, over the first two years

- Total crashes decreased by 11 percent.
- Angle crashes showed no change.
- There were no red-light-related rear-end crashes.
- Injury crashes decreased by about one-third.[21]

However, the Seattle analysts did not think there were enough data to reach a definite conclusion on effectiveness based on crash frequency.

The city of Calgary, Alberta, Canada, reported in early 2009 that since 2001 when they installed red-light cameras

- Right-angle crashes have decreased at red-light camera locations by about 48 percent.
- Rear-end collisions have dropped by about 39 percent.[22]

A review of 10 controlled before-and-after studies in Australia, Singapore and the United States by The Cochrane Collaboration found that

- Right-angle crashes were reduced by 24 percent.
- There was no significant change in rear-end crashes.[23]

A different canvass of U.S. and international red-light camera evaluations found that,

- Angle collisions due to red-light cameras decreased by 10 to 50 percent.
- Rear-end collisions increased from zero to 60 percent.[24]

Crash Severity

Crash severity measures how serious the results of a crash are to those involved. Severity is most often described as a percentage of crashes that involve injuries or fatalities. Sometimes an index is used based on a sliding scale of point values ranging from a high for a fatal crash to a low for no significant damage.

Crash severity at signalized intersections. Some intersection crash types have a higher incidence of injuries and fatalities than others. This results from the angle of vehicle impact and speed of collision. Angle crashes account for more intersection fatalities than any other type (59 percent).[25] They usually involve moderately high speeds and collisions involving the passenger compartment of at least one vehicle. They comprise the majority of red-light running crashes. Rear-end crashes, the other prominent type associated with red-light enforcement, account for only about 4 percent of fatal intersection crashes.

Impact of red-light camera enforcement. In an evaluation of red-light camera effectiveness of 132 sites in seven jurisdictions[26]

- Total of right-angle and rear-end crashes decreased by less than 1 percent.
- Total right-angle and rear-end injury crashes declined by about 5 percent.

The city of Garland, Texas, evaluated four arterial intersections, each with a camera on one approach, and compiled injuries per year before and after implementation.[27] The comparison of 31 month before-and-after periods showed that total injury crashes decreased by about 28 percent. Raw data from Irving, Texas, show that in the first 18 months of red-light camera use, the severity index dropped by 73 percent using a 10-point crash severity scale.[28]

The city of Toronto, Ontario, Canada, reported that red-light cameras resulted in

- Fatal and injury angle crash decrease of about 48 percent.
- Property damage only crash reduction of about 26 percent.[29]

An IIHS review of international red-light camera experience found that with red-light camera enforcement, injury crashes decreased by 25 to 30 percent.[30] Further, a review of 10 controlled before-and-after studies of red-light cameras in Australia, Singapore and the United States showed that total injury crashes decreased by an average of about 16 percent.[31]

Red-Light Violations

Red-light violations result in the possibility that two (or more) vehicles will collide within an intersection. Hence, every red-light running violation creates potential for a crash. Reductions in violations should produce crash reductions, especially in right-angle crashes. However, it is recognized that increased stopping for red lights can cause an increase in rear-end crashes.

The IIHS reported that they found red-light camera enforcement reduces violation rates by about 40 percent.[32] Further, the Garland, Texas, evaluation showed that violations per camera declined by about 56 percent from the first month of implementation to the 31st month.[33] This is about 2.2 percent per month.

In College Station, Texas, the violation rate over the first year of operation for six camera-equipped approaches[34]

- Decreased by about 49 percent; and
- Showed violations by movement type during one four-month period as[35]
  - Through: 50 percent.
  - Right turn: 47 percent.
  - Left turn: 3 percent.

During the first year of red-light camera enforcement, violations were found to have

- Decreased by about 41 percent in Fairfax, Virginia;
- Decreased by over 70 percent in Charlotte, North Carolina;
- Decreased by about 68 percent in San Francisco, California; and
- Decreased by about 92 percent in Los Angeles, California.[36]

During the first year of operation in Georgia

- Violations at one Rome intersection decreased by about 32 percent; and
- Violations at six locations in Alpharetta declined by an average of about 64 percent.[37]

The city of New Orleans, Louisiana, USA, installed red-light cameras at 17 intersections. After seven months of operation, violations dropped by about 85 percent.[38]

The evaluation of red-light camera experience in San Diego showed that at 19 red-light camera intersections

- Violations decreased by a median amount of 3.2 percent per month over 12 to 34 months.
- Violations at 18 of the 19 intersections decreased by at least 2.1 percent per month.
- Violation trend decreases continued throughout the evaluation period, although with a declining rate (32

percent the first year and 54 percent cumulative for two years).[39]

The same evaluation supported confirmed the contention that extension of the yellow change interval will solve most of the red-light running problems; yellow intervals were extended by varying amounts up to about 1.6 seconds, with the result being that

- Violations decreased by 30 to 88 percent with an average of about 50 percent; and
- That still left 50 percent to be addressed by other means, such as enforcement.

Over the first five years of its program involving up to 30 camera locations, Howard County, Maryland, red-light camera citations for red-light running compared violations and found that

- Red-light running citations decreased by 18 to 67 percent.[40]
- Cameras at two locations were retired after daily violations decreased from 114 and 121 to less than three per day each.[41]

A two-year evaluation of red-light camera effectiveness in Seattle, Washington, covered six approaches at four intersections and found that red-light violations decreased by about 44 percent after one year and 59 percent after two years.[42]

A study of red-light camera enforcement in northeastern Virginia compared violation rates between the first and second three-month periods of implementation.[43] It found that red-light camera citations were 21 percent less in the second three months than they had been during the first three.

An international canvass of red-light camera evaluations included violation comparisons for 11 cities. Findings showed that violations declined by between 21 and 75 percent with an average of 46 percent.[44]

The city of Philadelphia implemented a two-phase program to reduce red-light running.[45] First they lengthened the yellow signal interval; then they added six red-light cameras. A study by IIHS found that

- Violations declined by 36 percent with the lengthened yellow interval.
- Red-light camera enforcement reduced the remaining violations by 96 percent.

An IIHS review of international red-light cameras studies revealed that the cameras reduced red-light running violations by 40 to 50 percent.[46] Another IIHS evaluation found that during the first four months of camera use in Oxnard, California, violations declined by about 42 percent.[47]

CONCLUSIONS

The findings described above are the results of many different evaluations performed on differing data of differing sample sizes for differing types of intersections using different evaluation methods. However, the trends are quite clear and undeniable, even if the numerical values may not be fully certain.

If installed at locations with significant red-light running crashes and/or violations, over a group of intersections, red-light cameras

- Substantially reduce red-light violation rates;
- Reduce crashes that result from red-light running;
- Usually reduce right-angle collisions;
- May result in an increase in rear-end collisions;
- May or may not reduce total crashes but rarely result in a substantial increase; and
- Usually reduce crash severity by virtue of reducing the more severe right-angle crashes while sometimes increasing the less severe rear-end collisions.

Red-light cameras are to aid enforcement and should not be considered a substitute for proper traffic engineering of signalized intersections. If a signalized intersection has been analyzed and all reasonably practical measures have been taken to help drivers see the signals, and if red-light running still persists, increased enforcement by red-light cameras or other means will likely be effective. ■

References

1. James Bonneson, Karl Zimmerman, *Red-Light Running Handbook: An Engineer's Guide to Reducing Red-Light-Related Crashes,* Product 0-4196-P1, Texas Transportation Institute, College Station, Texas, September 2004.

2. "Q&As: Red Light Cameras," Insurance Institute of Highway Safety, Arlington, Virginia, January 2009, http://www.iihs.org/research/qanda/rlr.html, accessed October 7, 2009.

3. "Communities Using Red Light and/or Speed Cameras as of September 2009," Insurance Institute for Highway Safety, Arlington, Virginia, http://www.iihs.org/research/topics/auto_enforce_cities.html, accessed September 8, 2009.

4. *Impact of Red Light Camera Enforcement on Crash Experience,* NCHRP Synthesis 310, Transportation Research Board, Washington, DC, 2003.

5. "Red Light Cameras Get Extended Stay on Our Roads," City of Toronto Transportation Services, http://www.toronto.ca/transportation/redlight_cameras/index.htm, accessed September 8, 2009.

6. Shauna Hallmark and Tom McDonald, "Evaluating Red Light Running Programs in Iowa," Tech Transfer Summary, Center for Transportation Research and Education, Iowa State University, December 2007.

7. *Manual on Uniform Traffic Control Devices,* Federal Highway Administration, Washington, DC, 2009 or state's adopted MUTCD.

8. Forrest M. Council et al., *Safety Evaluation of Red-Light Cameras,* FHWA-HRT-05-048, Battelle Memorial Institute, Columbus, Ohio, April 2005.

9. Unpublished summaries, Texas Transportation Institute, May 2009.

10. "Report on the Effectiveness of Automated Red Light Enforcement," City of Garland Transportation Department, updated September 2006 plus unpublished supplemental tables received October 7, 2009.

11. "Red Light Safety Program," City of Dallas, Dallas, Texas, http://www.dalascityhall.com/pubsafe/safelight.html, accessed October 9, 2009.

12. Data received from Christopher Bruton, City of Irving, October 7, 2009.

13. *Impact of Red Light Camera Enforcement on Crash Experience,* NCHRP Synthesis 310, Transportation Research Board, Washington, DC, 2003.

14. Kangwon Shin and Simon Washington, "The Impact of Red Light Cameras on Safety in Arizona," *Accident Analysis and Prevention,* Vol. 39, 2007, www.elsevier.com.

15. *Impact of Red Light Camera Enforcement on Crash Experience,* NCHRP Synthesis 310,

Transportation Research Board, Washington, DC, 2003.

16. "Automated Enforcement of Traffic Signals: A Literature Review – ITS Report," Mitretech, August 13, 2001, http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13603.html.

17. George E. Frangos, "Automated Enforcement: 10-Year Evaluation of Red Light Running Detection, Howard County, Maryland," Howard County Traffic Engineering Division, Columbia, Maryland, undated.

18. J. Golob et al, "Impacts of San Diego Red Light Enforcement on Traffic Safety," for presentation to 82nd Annual Meeting of Transportation Research Board, Washingron, DC, November 14, 2002.

19. *Impact of Red Light Camera Enforcement on Crash Experience*, NCHRP Synthesis 310, Transportation Research Board, Washington, DC, 2003.

20. "Experience in Georgia with Photo Enforcement," Georgia Section ITE Safety Committee, ITE 2008 Technical Conference, Miami, Florida, March 31, 2008.

21. "City of Seattle Traffic Safety Camera Evaluation, Year II Evaluation," City of Seattle Police Department, Seattle, Washington, December 2008.

22. "Getting Around is Safer," City of Calgary official Web site, http://www.calgary.ca/portal/server.pt/gateway/PTARGS_0_2_761372_0_0_18/Getting+around+is+getting+safer.htm, accessed October 14, 2009.

23. "Q&As: Red Light Cameras," Insurance Institute of Highway Safety, Arlington, Virginia, January 2009, http://www.iihs.org/research/qanda/rlr.html, accessed October 7, 2009.

24. Sarah Rocchi and Suzanne Hemsing, "A Review of the Safety Benefits of Red Light Cameras," Compendium of Technical Papers, ITE 1999 Technical Conference, March 1999.

25. *A Guide for Reducing Collisions at Signalized Intersections*, NCHRP Report 500, Volume 12, Transportation Research Board, Washington, DC, 2004.

26. Forrest M. Council et al, *Safety Evaluation of Red-Light Cameras*, FHWA-HRT-05-048, Battelle Memorial Institute, Columbus, Ohio, April 2005.

27. "Report on the Effectiveness of Automated Red Light Enforcement," City of Garland Transportation Department, updated September 2006 plus unpublished supplemental tables received October 7, 2009.

28. Data received from Christopher Bruton, City of Irving, October 7, 2009.

29. "Red Light Cameras Get Extended Stay on Our Roads," City of Toronto Transportation Services, http://www.toronto.ca/transportation/redlight_cameras/index.htm, accessed September 8, 2009.

30. R. Retting, S. Ferguson, S. Hakkert, "Effects of Red Light Cameras on Violations and Crashes: A Review of International Literature," *Traffic Injury Prevention*, Volume 4.

31. "Q&As: Red Light Cameras," Insurance Institute of Highway Safety, Arlington, Virginia, January 2009, http://www.iihs.org/research/qanda/rlr.html, accessed October 7, 2009.

32. "Red Light Cameras Yield Big Reductions in Crashes and Injuries," *Status Report*, Vol. 36, No. 4, Insurance Institute for Highway Safety, Arlington, Virginia, April 28, 2001.

33. "Report on the Effectiveness of Automated Red Light Enforcement," City of Garland Transportation Department, updated September 2006 plus unpublished supplemental tables received October 7, 2009.

34. Data by telephone from City of College Station, Troy Rother, October 12, 2009.

35. "Red Light Camera Quick Stats," City of College Station, Texas, http://www.cstx.gov/index.aspx?page=2777, accessed October 14, 2009.

36. "Using Red-Light Cameras to Reduce Red-Light Running," Issue Brief 7, Institute of Transportation Engineers, Washington, DC, April 2004.

37. "Experience in Georgia with Photo Enforcement," Georgia Section ITE Safety Committee, ITE 2008 Technical Conference, Miami, Florida, March 31, 2008.

38. "61,000 Photo Enforcement Violations Cited in 2008," Mayor's Press Office, City of New Orleans, Louisiana, February 20, 2009.

39. J. Golob et al, "Impacts of San Diego Red Light Enforcement on Traffic Safety," for presentation to 82nd Annual Meeting of Transportation Research Board, Washington, DC, November 14, 2002.

40. George E. Frangos, "Automated Enforcement: 10-Year Evaluation of Red Light Running Detection, Howard County, Maryland," Howard County Traffic Engineering Division, Columbia, Maryland, undated.

41. "Automated Enforcement of Traffic Signals: A Literature Review – ITS Report, Mitretech, August 13, 2001, http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13603.html.

42. "City of Seattle Traffic Safety Camera Evaluation, Year II Evaluation," City of Seattle Police Department, Seattle, Washington, December 2008.

43. Lawrence F. Decina, et al, *Automated Enforcement: A Compendium of Worldwide Evaluations of Results*, DOT-HS-810-763, TransAnalytics LLC, Kulpville, Pennsylvania, September 2007.

44. Sarah Rocchi and Suzanne Hemsing, "A Review of the Safety Benefits of Red Light Cameras," Compendium of Technical Papers, ITE 1999 Technical Conference, March 1999.

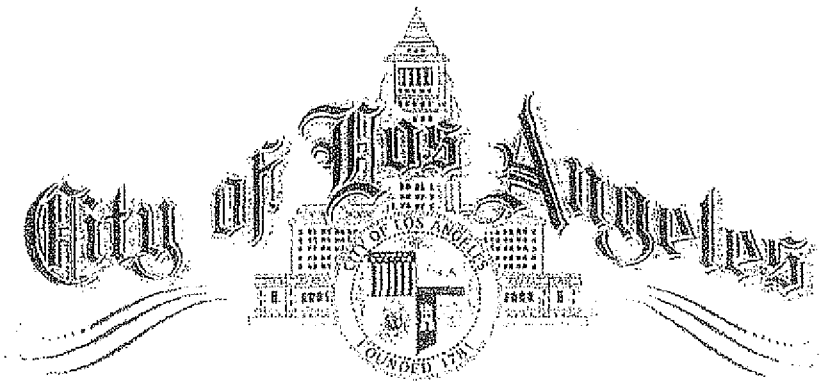
45. R. Retting, S. Ferguson, C. Farmer, "Reducing Red Light Running through Longer Yellow Signal Timing and Red Light Camera Enforcement: Results of a Field Investigation," *Accident Analysis and Prevention*, Volume 40, 2008, www.elsevier.com.

46. R. Retting, S. Ferguson, S. Hakkert, "Effects of Red Light Cameras on Violations and Crashes: a Review of International Literature," *Traffic Injury Prevention*, Volume 4.

47. "Camera Use Deters Red Light Running in Virginia Community," Status Report, Vol. 33, No. 10, Insurance Institute for Highway Safety, December 5, 1998.

BRIAN S. BOCHNER, *P.E., PTOE, PTP is a senior research engineer at the Texas Transportation Institute (TTI) in College Station, Texas, USA. He has conducted traffic operations and safety improvement studies over much of his more than 40 years of planning, design, implementation, research and training experience. He is an Honorary Member of ITE and currently serves on ITE's Standing Committee on Recommended Practices. He is a past international president of ITE.*

TROY D. WALDEN, *Ph.D., is an assistant research scientist for the Texas Transportation Institute-Center for Transportation Safety at the Texas A&M University System, College Station, Texas, USA. His research interests include automated enforcement, crash analysis, impaired driving and highway safety. Prior to joining the Texas A&M University System, he was a private transportation legal consultant, law enforcement officer and transportation safety program manager. He has more than 21 years of experience in the fields of traffic safety and law enforcement.*



WENDY GREUEL
CONTROLLER

September 29, 2010

The Honorable Antonio Villaraigosa
The Honorable Carmen Trutanich
Honorable Members of the City Council

The City currently has 32 Photo Red Light cameras, which are designed to cite drivers who break the law by running red lights at intersections throughout Los Angeles. The program's stated primary objective is to improve public safety, by reducing accidents at the City's most dangerous intersections. The LAPD – which oversees the contract along with the City's Department of Transportation (DOT) - has reported that the cameras help to generate millions of dollars for the City, as photo red light violations cost drivers $446 per incident.

The attached audit of the City's Photo Red Light Program (PRLP) found that the program has not been able to document conclusively an increase in public safety due to incomplete data collection. In addition, over the past two years, the City has expended $2.6 million to support the PRLP without full cost recovery. Further, it appears that the red light cameras were not necessarily installed at the City's most dangerous intersections. In fact, the methodology used to select the intersections actually excluded some of the highest risk intersections. This included allowing for at least one red light camera per Council District, weak infrastructure at some locations and not wanting to conduct the additional analyses required for State controlled-locations.

For example the LAPD did not select two intersections – La Brea Avenue & 6th Street, and Hayvenhurst St. & Nordhoff Ave. – where there were a combined 24 accidents and 2 fatalities from 2003-2005. However, they did select Whittier Blvd. and Lorena Street where there were only 2 accidents and no fatalities. If public safety is the number one priority of the PRLP, then the LAPD should select only the most dangerous intersections.

It is important to note that, according to the LAPD, there have been some significant accomplishments of the program. Our audit found that for drivers who dispute their citation through a court trial, less than 1% of the trials end in a "not guilty" verdict. Further, there have been no fatalities at monitored intersections since the current contract was implemented in 2006.

Some of the specific audit findings include:

ATTACHMENT 3

- The PRLP has not conclusively shown to have increased public safety.
    - According to the LAPD's own statistics, 12 of the 32 intersections actually had more accidents after the cameras were activated, 4 had no change and 16 had fewer accidents. However the number of accidents that occurred over the time frame they examined was so small the differences were nearly insignificant.
    - Other factors may have also been responsible for the collisions at the 16 intersections, such as an overall reduction in accidents throughout Los Angeles due to fewer people driving during the economic downturn.

- Rather than choosing PRLP locations based on the highest number of accidents, it appears that other factors including the decision to place at least one camera in every Council District determined where cameras were placed.
    - LAPD and DOT agreed that several political issues were considered in the program implementation. LAPD stated that the City Council "strongly recommended that each {Council} district should have at least one PRL intersection."
    - For some locations, such as City streets that are also State highways (Santa Monica Blvd.), the State requires that an engineering analysis be performed prior to applying for approval of an automated enforcement system. The LAPD believes that the additional time and expense that would be necessary to get approval from the State was not justified for the PRLP. However the California State Auditor said in a July 2002 audit that cities should not omit intersections that require State approval when public safety would benefit.

- Currently the PRLP has cost the City more than $2.6 million to operate over the revenue received.
    - Even though the PRLP costs the City money, not having the cameras would require over 100 motor officers, with combined salaries of more than $10 million to monitor the 32 intersections constantly.

The current PRLP contract is in its final year, and the LAPD is about to issue an RFP to execute a new contract in 2011. It is critical that lessons are learned and improvements are made so that the new contract assures the City's financial interests are protected. In addition, LAPD should ensure effective use of program resources and monitor the program results to maximize public safety.

Sincerely,

Wendy Greuel
City Controller

WENDY GREUEL
CONTROLLER

September 29, 2010

Charlie Beck, Chief of Police
Los Angeles Police Department
100 West First Street, Suite 1072
Los Angeles, CA 90012

Dear Chief Beck:

Enclosed is a report entitled "Audit of the Photo Red Light Program." A draft of this report was provided to your Department on July 2, 2010. Comments provided by your Department and by the Department of Transportation at the July 30, 2010 exit conference were evaluated and considered prior to finalizing this report.

Please review the final report and advise the Controller's Office by October 29, 2010 on planned actions you will take to implement the recommendations. If you have any questions or comments, please contact me at (213) 978-7392.

Sincerely,

FARID SAFFAR, CPA
Director of Auditing

Enclosure

cc: Reverend Jeff Carr, Chief of Staff, Office of the Mayor
Eileen Decker, Deputy Mayor, Office of the Mayor
Richard A. Roupoli, Deputy Chief & CO, Special Operations Bureau, LAPD
Rita L. Robinson, General Manager, Department of Transportation
Miguel A. Santana, City Administrative Officer
June Lagmay, City Clerk
Gerry F. Miller, Chief Legislative Analyst
Independent City Auditors

City of Los Angeles
Office of the Controller

Audit of the
Photo Red Light Program

September 29, 2010

Wendy Greuel
City Controller

TABLE OF CONTENTS

Audit of the Photo Red Light Program

EXECUTIVE SUMMARY

The Office of the City Controller has completed an Audit of the City's Photo Red Light Program. This program automates the enforcement of traffic laws that require vehicles to stop at red signal lights, and is currently in effect at 32 intersections throughout the City of Los Angeles.

Background

The Photo Red Light Program (PRLP) is an enforcement approach to increasing traffic safety, which began as a pilot program in December 2000. The Los Angeles Police Department (LAPD) is the program sponsor and contract administrator, and works in partnership with the Los Angeles Department of Transportation (LADOT) in managing the program.

LAPD works closely with the contracted vendor, which was Nestor Traffic Solutions, Inc. until September 2009, at which time the current vendor, American Traffic Solutions, Inc., stepped in to fulfill contract requirements.

LAPD's stated goal of the Photo Red Light Program is "to increase intersection safety by reducing the number of serious injury and fatality traffic collisions caused by motorists who fail to stop for red lights and to maximize red light enforcement through efficient use of police resources."

LAPD has previously reported that the PRLP has had a significant impact on public safety, measured as a reduction in traffic collisions and fatalities, and has generated significant revenue.[1] During 2009 LAPD issued approximately 45,000 citations through the PRLP, which according to LAPD represented over 22% of the moving violations citywide. A red-light violation carried a fine of $446 as of fieldwork completion.

The overall objective of our review was to assess the efficiency and effectiveness of the City's management of the PRLP. We sought to determine how the City ensured adequate performance by the vendor, and how the City evaluates the status, problems or successes of the program. We also reviewed leading practices and those in use by other jurisdictions, and assessed whether the City achieves the program's goal of reducing traffic collisions. The audit was conducted in accordance with Generally Accepted Auditing Standards and covered the three-year period ended October 31, 2009, though we considered the conditions and some data through March 2010.

[1] Board of Police Commissioners report nos. 09-0304, 10-0067, & 10-0122, dated July 17, 2009, February 2, 2010, & March 23, 2010, respectively.

Summary of Audit Results

We found that the program cannot conclusively demonstrate that it has reduced traffic collisions, thereby increasing public safety. While the PRLP offers less expensive and less dangerous enforcement of red light violations than traditional field officer enforcement, the lack of specific metrics for reporting program success and the method by which program locations were selected, whereby some high risk intersections were eliminated, detract from its ability to clearly demonstrate a significant improvement to public safety.

In addition, we noted that the PRLP does not currently generate revenue in excess of costs for the City. Considering the actual PRLP citation revenue received compared to City resources dedicated to the program, the City actually incurred a net cost of more than $1.5 million in 2008 and $1 million in 2009 to operate the Photo Red Light Program. It is essential that before the City allocates additional resources to the program, it must define the specific outcomes that are expected to be achieved. Therefore, the City must clearly demonstrate how the PRLP will increase safety through enforcing drivers' compliance with traffic laws. By considering additional issues in determining when to issue a citation, and through legislative action, there may be opportunities to increase program revenue and more closely tie penalties to the relative danger of the violation.

We found that the current vendor is performing adequately and LAPD's oversight was generally appropriate. However, we noted certain shortcomings in the contract terms and program oversight that require management attention. For example, LAPD should consider additional controls to ensure completeness of all data maintained by the vendor. The City intends to release an RFP and issue a new contract, with potential for expansion to additional intersections. In selecting a vendor and negotiating a new contract, the City must ensure the City's financial interests are adequately protected.

Key Findings

- **The method used to select PRLP locations eliminated some high risk intersections.**

  LAPD initially identified intersections with the highest number of collisions for consideration in the program. However, other factors also played a role in final selection which may ultimately reduce the program's effectiveness. LAPD recommended a fairly even distribution of monitored enforcement citywide, so each Council District was allocated at least one PRL location. Also, due to funding constraints, locations that lacked the stronger steel poles necessary for installation of the PRLP equipment were not considered. Finally, locations that would have required State approval were also not considered. This resulted in the City not installing automated red-light cameras at some intersections with a higher and disproportionate number of collisions than others that were selected.

- **Location decisions did not involve engineering analyses to formally document the City's consideration of other, non-enforcement solutions that may have a more direct impact on public safety.**

  Although LADOT provided significant input to LAPD regarding which intersections to include in the PRLP, they did not document how other engineering solutions had been considered to support a conclusion that an enforcement solution would have the maximum impact on public safety. When considering new locations for an expanded PLRP, the City should consider utilizing a standardized engineering analysis template for this purpose.

- **As measured and reported by LAPD, the PRLP has not conclusively shown to have increased public safety.**

  LAPD has reported program results based on statistics tracked by their internal databases which were incomplete and did not include information such as collision type (e.g., broadside or rear-end), the direction and speed of vehicle, and time into red, which may impact reported program results.

  LAPD has focused their attention on reporting PRLP success by tracking collisions which were specifically caused by a red light violation, because those are the stated target of enforcement efforts. However, not all collisions result in a LAPD report, and the coded data within LAPD's traffic databases is insufficient to support a full analysis of all collisions that could be impacted by the program. A more comprehensive and systematic approach to evaluating the PRLP is needed. This could include tracking other information in addition to the cited violation considered as the primary collision factor, as well as measuring the change in both collision and violation rates over time.

- **The assessment of the program's effectiveness as reported by LAPD is questionable since LAPD did not consider other factors that may be responsible for a reduction in traffic collisions.**

  There has been a wide fluctuation in reported collisions at PRL intersections attributed to the program, starting from the high of 107 in 2004, gradually declining to a low of 30 in 2008, then rising again to 46 in 2009. While those figures should not be considered as the sole measure of the program's success, LAPD has also not considered or reported other factors that may have had an impact on the number of collisions. For example, citywide traffic collisions have declined by 14% over the past two years. At a minimum, variations in traffic volume should be considered when reporting the ratio of traffic collisions as well as violations.

- **The Program's operating costs exceed Program revenue.**

  Our audit disclosed that the PRLP has not provided additional revenue to the City. Because the City's share of citation revenue is only about one-third of the fine amount,[2] and many citations are either never paid or adjudicated without a payment due, we found the City received only $2.3 and $3 million from the PRLP during 2008 and 2009, respectively. When compared to a conservative estimate of the costs incurred by the City to implement the program, the PRLP actually cost the City approximately $1.5 million in 2008 and $1 million in 2009.

- **All PRLP violations were assessed a $446 fine regardless of the relative danger of the violation.**

  The PRLP is considered an enforcement solution to modifying risky driver behavior, thereby increasing traffic safety. However, all violations captured by the PRLP are cited under the same CVC that requires a significant monetary penalty. LAPD does not consider the relative danger of the violation, and its potential impact to safety, in assessing the citable offense. These include slower, right-turn violations and the elapsed time into red of the vehicle. Recent action by the State legislature will reduce the fine for right-turn on red violations.[3]

- **State law and recent legislative changes could significantly reduce City revenue related to the PRLP.**

  The State regulates traffic laws through the California Vehicle Code, and has additional limitations on the use of automated enforcement technology in assessing fines and penalties. Recent actions by the State legislature further limit cities' authority relative to PRLP. The City has no authority to cite violations under a municipal ordinance, and cannot use PRLP evidence to cite other moving/safety violations. In addition, the penalty amount for right-turn violations, which represent the majority of PRLP citations, has recently been reduced.

- **In anticipation of a new contract for the PRLP, the City must address key contract terms and ensure diligence in vendor selection to protect the City's financial interests.**

  The current contract is in its final year; LAPD just received approval to issue an RFP and execute a new PRLP contract in 2011. As the PRLP equipment is proprietary and the City intends to expand the program to additional locations, the new vendor will upgrade and replace all equipment, as well as design and install the needed infrastructure on City property. Based on lessons learned when the previous vendor (Nestor)

[2] $157 of the $446 total fine, not including a $64 traffic school fee.
[3] AB 909 passed the Senate 8/12/10 and Assembly 8/25/10.

had financial difficulties and was subsequently acquired by a third-party (ATS), and the fact that the City plans to shift new construction responsibilities to the vendor, LAPD should work closely with the CAO and City Attorney to assure the City's financial interests are protected.

These issues and related recommendations are presented in more detail in the remainder of this report.

Review of Report

We discussed audit issues with LAPD, LADOT, and ATS during fieldwork, and provided a copy of our draft report to LAPD. We held an exit conference with representatives of LAPD and LADOT on July 30, 2010, and considered their extensive comments as we finalized this report.

LAPD disagrees with our emphasis on the need for better data and analysis to measure PRLP success. They cite reports in technical studies that generally identify public safety benefits from municipal PRL systems. They were concerned that the additional costs involved in gathering and analyzing data—even data generated by the PRLP—were unnecessary because PRLP in general improves public safety.

Our audit disclosed a need for improved understanding of how well the method of intersection selection worked and which aspects of PRL enforcement produce the most public safety value for the resources invested. There is also a need to better identify which collisions relate to PRL enforcement and how to interpret trends in PRL collision data.

LAPD also disagreed with the result of our financial analysis of the program. LAPD believes that potential future collections on outstanding citations should be considered.

Though some outstanding citations may eventually be paid, under the City's current accounting practices, related receipts would be considered in that period. In addition, our review of Court data noted that only 3% of payments were for citations issued beyond the prior 12-months; therefore, future collections of long-unresolved tickets cannot be assured or quantified. Also, the City's ability to collect on these citations is questionable, since unresolved PRL citations do not result in a DMV hold being placed on the defendant's driver's license or vehicle registration, as was assumed by LAPD until this audit. Thus, there is little leverage to compel a future payment, which would improve the longer-term collection rate of these citations. Until the issue of legal leverage or improved collection procedures by the Court is resolved, the actual citation payment history should be considered indicative of the program.

We would like to thank the staff of LADOT, LAPD, and ATS for fully cooperating and providing information relative to this review.

CONTROLLER'S ACCOUNTABILITY PLAN

RECOMMENDATIONS	PAGE	MAYOR ACTION REQUIRED	COUNCIL ACTION REQUIRED	DEPARTMENT ACTION REQUIRED
1. LAPD and LADOT should increase transparency for an expanded PRLP by publicizing how the location selection process will ensure that the highest risk intersections are selected for the program. In addition, LAPD and LADOT should list intersections that meet published criteria, on their websites.	21			LAPD LADOT
2. LAPD and LADOT should obtain CalTrans approval to automate enforcement of intersections that meet selection criteria.	21			LAPD LADOT
3. LAPD and LADOT should seek funding for necessary infrastructure modifications at intersections that meet selection criteria.	21			LAPD LADOT
4. For any new intersection recommended in an expanded PRLP, LADOT should complete an engineering analysis template to formally document consideration of all appropriate countermeasures, and to support the recommendation that automated enforcement would have the greatest impact to improving public safety at that location.	25			LADOT
5. LAPD should modify the method by which the PRLP is evaluated by ensuring complete and relevant data that supports the type of enforcement, i.e., right turns or straight-through violations.	30			LAPD

RECOMMENDATIONS	PAGE	MAYOR ACTION REQUIRED	COUNCIL ACTION REQUIRED	DEPARTMENT ACTION REQUIRED
6. Over the long term, LAPD should pursue the full implementation of the planned integrated system to electronically record all relevant collision information, making it more easily accessible for data analysis and program evaluation.	30			LAPD
7. In the short-term, LAPD should expand their data collection from collisions at PRLP intersections. Rather than relying solely on key data fields captured by division databases, consider the information included in written collision reports and video images of the collisions that may be captured by the PRLP system, for example: ▪ Collision type (broadside, rear-end, etc.) ▪ Time into red ▪ Speed of the vehicle ▪ Movement preceding collision ▪ Feet from the intersection	30			LAPD
8. Because the PRLP seeks to modify risky behavior by ensuring compliance with traffic laws, LAPD should also assess the program results in terms of the rate of violations or citations issued through the PRLP by intersection approach. An expected outcome for a successful program would show that violations at a given location decrease over time.	30			LAPD

RECOMMENDATIONS	PAGE	MAYOR ACTION REQUIRED	COUNCIL ACTION REQUIRED	DEPARTMENT ACTION REQUIRED
9. In coordination with LADOT, LAPD should consider, at a minimum, the effect of traffic volume in the comparative metric in reporting and measuring program results. Specifically: a. The number or ratio of traffic collisions at monitored intersections (considered through implementation of recommendations 6 and 7) compared to the number of vehicles transiting a single approach. A successful program outcome would note a decline in the adjusted ratio. b. The number or ratio of violations at monitored intersections (considered through implementation of recommendation 8) compared to the number of vehicles transiting a single approach. A successful program outcome would also note a decline in the ratio.	34 35			LAPD
10. LAPD and LADOT should consider departmental priorities along with the expected outcomes of the PRLP in allocating resources to the program.	41			LAPD LADOT
11. Council should direct LAPD and the CLA to promote legislative action at the State to amend the CVC so that fines for red light violations reflect current technology and are proportional the to the level of danger (e.g., graduated fines, etc.).	43		X	LAPD

RECOMMENDATIONS	PAGE	MAYOR ACTION REQUIRED	COUNCIL ACTION REQUIRED	DEPARTMENT ACTION REQUIRED
12. LAPD should include a requirement in a new PRL contract for the vendor to serially number events so that LAPD review can easily detect any missing event numbers.	49			LAPD
13. LAPD should continually store their own log of all citations approved for issuance and periodically compare that log with the vendor's notification to the Court of citations mailed to registered owners and entered into the Court system.	49			LAPD
14. LAPD should include a requirement in the new PRL contract for the vendor to produce a comprehensive quarterly status report on each citation processed. For example, based on citation number, the status report could show the judicial and payment status of all citations previously and newly issued, broken out by month and year, and reconciled with the prior report.	49			LAPD
15. In negotiating the new contract for the PRLP, LAPD should seek competent counsel to protect the City's interests. Ensure issues regarding asset ownership, construction costs, and any related program delays due to construction, are specifically included in the contract terms.	51			LAPD

RECOMMENDATIONS	PAGE	MAYOR ACTION REQUIRED	COUNCIL ACTION REQUIRED	DEPARTMENT ACTION REQUIRED
16. LAPD should work with the City Attorney and the CAO in ensuring the selection process and contract terms fully protect the City's financial interests.	52			LAPD City Att'y CAO

INTRODUCTION AND BACKGROUND

The City of Los Angeles Photo Red Light Program (PRLP) of automated enforcement is a cooperative effort between the Los Angeles Police Department (LAPD) and the Los Angeles Department of Transportation (LADOT), who together oversee the contracted provider of the system.

The City executed a PRLP contract with Nestor Traffic Systems, Inc. (Nestor) on February 6, 2006; however, in September 2009 American Traffic Solutions, Inc. (ATS) acquired Nestor and assumed all duties under the current contract. The automated enforcement system currently operates at 32 intersections distributed throughout the City.

Automated enforcement of red signal lights is a process of systematically detecting, photographing, identifying, and citing violators using electronic equipment provided and maintained by an outside vendor. A sworn officer issues each citation by reviewing video and photographic evidence on a computer monitor, using proprietary software provided by the vendor.

Once approved by LAPD, the vendor prints and mails each citation and electronically transmits the citations to the Los Angeles Superior Court. During this adjudication phase the vendor staffs a hotline to answer questions about the citation process and to afford citation recipients the opportunity to review photographic or video evidence of the violation.

Goal of the PRL Program

According to the LAPD, the goal of the PRLP is to increase intersection safety by reducing the number of serious injury and fatality traffic collisions caused by motorists who fail to stop for red lights and to maximize red light enforcement through efficient use of police resources. Drivers may fail to stop for red signal lights for a variety of reasons, including temporary distractions and aggressive driving behavior.

Theoretically, public safety improves as drivers who are aware that red light cameras monitor an intersection modify their behavior to avoid the negative consequences of a citation and the related photographic evidence. A sentinel effect from this awareness can also result in modified driving on approaches to the same intersection that are not monitored, and even for other intersections.

PRL enforcement is one tool to reduce red light violations and related traffic collisions. Other industry established methods include appropriate intersection design, enhanced signage or pavement markings, extended yellow or red light timing and other traffic engineering solutions, as well as public information campaigns.

From Violation to Collection: How the PRLP Works

The City's PRL camera system typically monitors two opposing approaches to an intersection, primarily for straight-through or right-turn traffic.

For each monitored approach, the PRL system digitally records video and photographic evidence of red light violations or "events." The system digitally transfers and stores this evidence on remote ATS servers for processing. ATS visually reviews each event and determines whether it meets preliminary violation criteria and, if so, uses the license plate number to obtain registration and driver information from the California Department of Motor Vehicles (DMV).

For events that meet stated criteria, ATS composes a tentative citation and forwards it, along with the supporting video evidence, to a dedicated computer at LAPD. The California Vehicle Code (CVC) requires a sworn officer to approve the citation before the vendor submits it to the Court or to the registered owner of the vehicle.[4]

The LAPD officer's responsibility is to evaluate the video evidence of a violation, the legibility of the license plate, and whether the images are adequate to identify the driver. If so, and if in the officer's discretion a violation occurred, then the officer electronically approves a citation and ATS notification is automatic. If the camera does not capture a legible image of a license plate or an identifiable image of the driver's face, the officer cannot issue a citation.

ATS processes approved citations by printing and mailing them to the registered owners and responding professionally to calls received. The citation provides instructions for mailing the bail or fine to the Los Angeles Superior Court, as well as procedures for contesting the citation, including reporting the identify of the driver of the vehicle at the time of the violation if it was not the registered owner, and when to appear in court.

The Court retains a portion of the citation revenue and distributes the remainder based on various statutes, paying portions to the City, the County, and the State.

The History of the PRLP in Los Angeles

The City initiated photo red light camera enforcement as a pilot program in December 2000. LADOT and contractor Lockheed Martin—who later transferred its interest to Affiliated Computer Services (ACS)—worked together to install cameras at 16 intersections.

In April 2004, due to the impending expiration of the contract with ACS to operate the pilot program, and due to a change in the law governing automated enforcement programs, the Police Department recommended issuing an RFP for

[4] CVC §21455.5(c)(2)(F) and §40518

a new contract. In an effort to maintain continuity of service, the contract with ACS was extended for an additional year, until June 14, 2005.

In May 2004 the Police Department issued an RFP with a July 7, 2004 deadline for receipt of proposals. Six proposals were received, and a committee consisting of personnel from LAPD and LADOT rated the proposals based on cost, past performance, technical requirements, vendor technical competence, and additional considerations. Nestor Traffic Systems was selected.

In January 2005 the Board of Police Commissioners authorized the Chief of Police to negotiate a contract with Nestor, and in August 2005 the Commission approved the contract for Mayor and Council consideration. Council approved the contract on November 18, 2005, and it was executed on February 6, 2006 for a 3-year term, with options to extend for two additional 1-year terms.

According to LAPD, on June 4, 2009, the City was notified that Nestor filed for an appointment of a receiver in Superior Court in Providence County, Rhode Island.[5]

After Nestor entered financial receivership, ATS acquired and dissolved Nestor as a separate company. ATS then stepped in to fulfill contract requirements while working closely with LAPD. On March 30, 2010, Council approved the contract's formal assignment to ATS, and extended the current term through June 30, 2010. A second action extended the term through April 2011.

LAPD received authorization to issue a new RFP in 2010, and execute a new contract in 2011. LAPD also plans to expand the program by increasing the number of PRLP intersections, and due to budgetary constraints at LADOT, the selected vendor would bid to design, construct and install all necessary infrastructure at the new intersections.

Site Readiness, Installation and Functionality of Equipment at Intersections

Installation of PRL cameras and related equipment at 32 intersections around the City required engineering design work for each location. Each selected site was unique, with differing street geometry, slopes, sub-surface objects, street and adjacent-property surface material, speed limits, and unique and active traffic control equipment and infrastructure.

LADOT worked with Nestor to modify existing engineering drawings that LADOT then used to modify each intersection. PRL camera angles and the positioning of strobe lights and the system controls required careful evaluation of the pre-existing infrastructure to ensure a successful outcome.

LADOT took responsibility to modify pre-existing infrastructure in order to provide Nestor with physical attachment points for cameras, flash units, and a control cabinet. LADOT also constructed improvements necessary to provide power for

[5] Board of Police Commissioners 09-0304.

the system and data interconnectivity among system components. It was Nestor's responsibility to install cameras, flash units, and the control cabinet, and to test, activate, and maintain the PRL system.

Once the construction process ended, activation of the PRL camera system required testing, adjustment, and re-testing. On an ongoing basis, an LAPD officer visits each PRL intersection to visually inspect the equipment. On an annual basis LAPD, LADOT, and ATS representatives visit each intersection and certify that the operation of the equipment complies with State law.

Continual remote electronic monitoring of camera performance and outputs ensures functionality. When a technician performs any maintenance of equipment at a PRL intersection, the technician makes a manual entry in a paper log kept separately in ATS control boxes at each intersection. LAPD, LADOT, and ATS meet each week to resolve issues and ensure peak system performance.

The Finances of the Photo Red Light Program

LAPD, as administrator and process-owner of the PRLP, strongly affirms that the primary purpose of the program is to improve public safety, not to increase City revenues. However, critics of PRLP generally frame the program as driven by cities' desire to generate revenue. Revenue is the City's share of fines and penalties paid to the Superior Court by violators. As of fieldwork completion, the bail or penalty for most red light violations was set at $446 by State law.

The citation amount is calculated first on a base fine, upon which additional fees and penalties are calculated, based on various statutes. The CVC empowers the California Judicial Council to publish a statewide penalty schedule, but allows local courts to make modifications.

NOTABLE ACCOMPLISHMENTS

LAPD reports no fatalities at monitored intersections since the implementation of the current contract in April 2006, compared to five red light related fatalities in the prior two-year period for the intersections selected for automated enforcement.

The Police and Transportation Departments have successfully worked with contracted PRLP vendor, both Nestor Traffic Solutions, Inc. and American Traffic Solutions, Inc., to meet the contractual evidence quality standard.

LAPD also reported that for drivers who chose to dispute their citation through a court trial, the high quality of photographic evidence resulted in less than 1% of court trials ending in a "not guilty" verdict.

PRLP evidence can also potentially be of assistance in solving crimes, or in determining fault when collisions occur. LAPD also uses photographic evidence to verify compliance by sworn officers with traffic policies and procedures. For example, officers who violate LAPD policy by not wearing a seat belt in their patrol car can face disciplinary action.

LAPD also reported a vibrant outreach to the community and to other agencies. This includes participation in community-police advisory board presentations, safety fairs, conducting training for sworn officers of other agencies, and publishing articles in trade journals or making presentations to trade groups.

OBJECTIVES, SCOPE AND METHODOLOGY

The primary objective of our audit was to determine the efficiency and effectiveness of the City's oversight and management of the automated Photo Red-Light Program (PRLP). Specifically:

- To determine how the City performs or otherwise ensures adequate oversight and monitoring of contractor performance.
- To assess whether the City efficiently and effectively evaluates the status, problems, failures, or success of the PRLP.
- To assess whether the City efficiently and effectively recommends necessary actions to achieve the PRLP's goal of reduction in traffic collision[s].
- To assess whether the City has implemented best practices found in other comparable governmental agencies with a PRLP.

The audit scope included the 3-year period ended October 31, 2009, but we also considered current conditions and some data through March 2010. We specifically focused on evaluating how LAPD and LADOT appropriately ensure vendor performance in accordance with the contract, and how program managers review, evaluate, and communicate the program's results; including making specific recommendations to maximize the City's goals and objectives for the program. Our fieldwork was conducted during the period November 2009 through May 2010.

This audit was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

In conducting our audit, we reviewed and analyzed applicable policies and procedures; reviewed and analyzed documentation and studies prepared and conducted by the City and by other jurisdictions; and interviewed management and staff at the Police and Transportation Departments and at American Traffic Solutions, Inc.

SECTION I:THE PROGRAM'S IMPACT ON PUBLIC SAFETY

Finding #1: The method used to select the 32 locations for camera enforcement eliminated some high risk intersections.

LAPD's stated goal of the PRLP is "to increase intersection safety by reducing the number of serious injury and fatality traffic collisions caused by motorists who fail to stop for red lights and to maximize red light enforcement through efficient use of police resources." To achieve the goal relative to intersection safety, after considering all other solutions, automated enforcement should focus on intersections based on the number and nature of traffic collisions per vehicle transiting an intersection.

LAPD's PRL intersection selection process started by examining major-intersection collision data for the years 2003-2005. LAPD considered those collisions that were caused by red light violations, excess speed, following too closely, inappropriate left-turn, and DUI. LAPD stated that based on traffic collisions, and working in conjunction with LADOT, they first narrowed that down to approximately 200 intersections for consideration.

LAPD indicated they further narrowed the list to 88 intersections—22 in each Bureau—by talking with traffic officers and their supervisors or other experienced LAPD or LADOT personnel. For each of those 88 intersections, LAPD or LADOT personnel visited each location and completed a Proposed Intersection Field Checklist that LAPD and LADOT then used to narrow the total number of PRL intersections down to 32.

Among the factors that influenced decision-making (not in any priority order) were: 1) the Council District, 2) whether existing poles supporting signal lights were of (weaker) concrete or (stronger) steel, and 3) whether an intersection required State approval for PRL enforcement. While the location (Council District) played a significant role in prioritizing locations, the other two simply eliminated some locations from consideration. These criteria demonstrate that issues other than strictly public safety played a role in determining the program locations.

Exclusions due to Perceived "Citywide" Program

LAPD emphasized the importance that the public perceive automated Photo Red Light enforcement as a citywide program. PRL cameras were to be located in all areas of the City, with the expected result of moderation of driver behavior citywide. Stating it was important to garner maximum Council support for the PRLP, LAPD used the Council District (CD) where an intersection was located as a criterion. Therefore, of the 32 intersection locations, each CD was apportioned at least one camera, which required the exclusion of some intersections with a

higher number of collisions or fatalities. Exhibit 1[6] presents the current PRL locations throughout the City.

LAPD stated that if safety alone, as measured by the number of collisions at each intersection, had been the deciding criteria, it would have resulted in an uneven distribution of PRL cameras throughout the City; which would have resulted in a very negative public perception of the program.

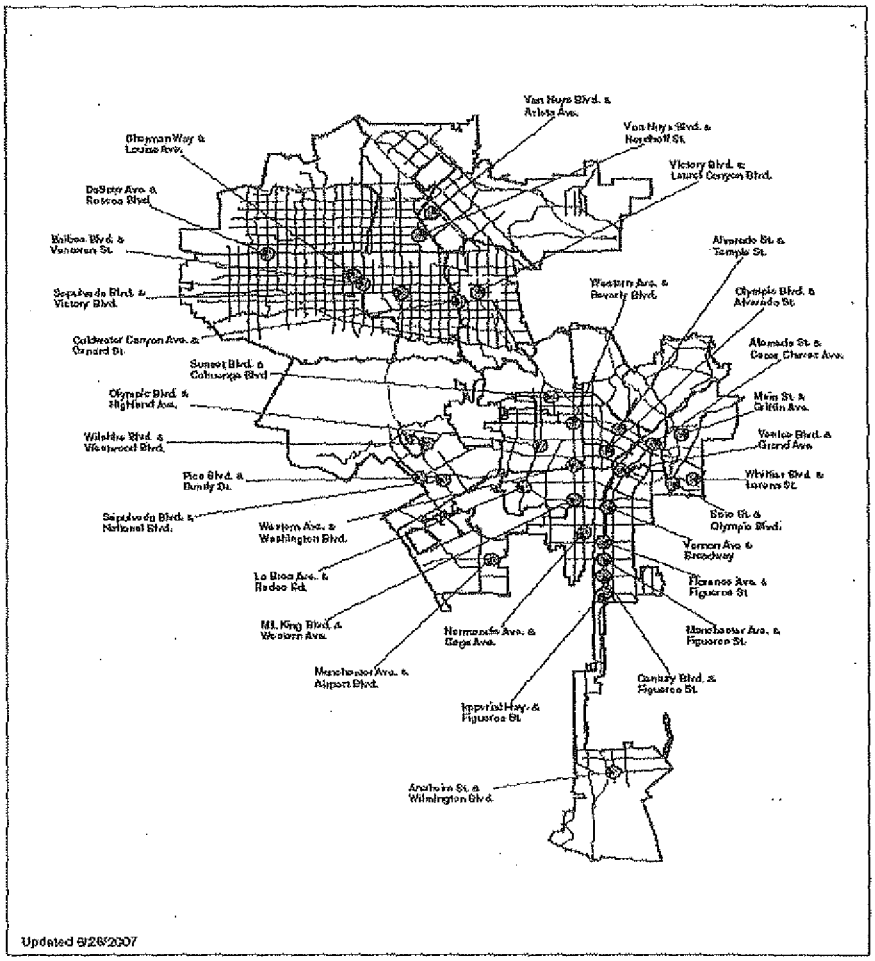
Both LAPD and LADOT agreed that several political issues were considered in the program implementation. LAPD stated the City Council "strongly recommended that each [Council] district should have at least one PRL intersection," but went on to explain that this was not a written directive or formal motion, rather, was LAPD's understanding of the full Council's intent.

LADOT added that as the City considers expansion of the PRLP, new locations could be added primarily based on safety concerns.

[6] http://www.lapdonline.org/search_results/content_basic_view/1022

Exhibit 1

City of Los Angeles
Photo Red Light Locations



Exclusions based on Limitations of Existing Infrastructure

The second factor limited the inclusion of some intersections due to funding constraints. LADOT recommended against selecting intersections with weaker concrete poles, rather than stronger steel poles, because of the high cost of replacing them. While LADOT agreed to fund some infrastructure internally, i.e., improvements that were required for the installation of the PRL equipment, LAPD and LADOT stated there was no funding available for any major infrastructure upgrade, which eliminated some intersections from consideration.

Exclusions based on Required Jurisdictional Approvals

LAPD also bypassed a strict public-safety approach to the selection of locations by not considering intersections in locations that required State approval, because of potential delays. For some locations, such as those adjacent to freeway ramps or where City streets are also noted as State highways, the State requires an engineering analysis[7] be performed prior to applying for approval of an automated enforcement system. Contradicting this approach, the California State Auditor recommended in a July 2002 audit that cities not omit intersections requiring State approval when public safety would benefit.

LAPD believes that the additional time and expense that would have been necessary to obtain an affirmative State opinion was not justified for the PRLP. Therefore, locations which would have required State approvals were eliminated from consideration.

LAPD described an example of their interaction with CalTrans relative to the PRLP, as discussions between a CalTrans Senior Engineer and the LADOT PRL Coordinator: CalTrans staff inquired about installing cameras on Santa Monica Boulevard at Gower Street to correct the existing collision history (Santa Monica Boulevard in this area is State Highway 2, subject to CalTrans authority). The LADOT representative stated they would consider this location only if the CalTrans Senior Engineer could get his supervisor, the CalTrans Deputy Director of Operations, to commit that if the City proposed PRL cameras at that location, then the proposal would be approved by CalTrans. No response was ever received from the CalTrans Senior Engineer.

This informal exchange does not reflect a determined approach to resolving issues of public safety. We would have expected to see high-level, formal correspondence between LAPD and CalTrans at this stage of a pilot program.

We discussed this issue with the Chief of the Permits section of CalTrans in Los Angeles who indicated that CalTrans is required to respond to "encroachment" requests for automated enforcement within 60 days. However, she stated that submissions routinely run into problems because applicants misjudge CalTrans requirements, leading to multiple 60-day response cycles. Nevertheless, the CalTrans Chief indicated that other municipalities have received permits for automated enforcement of State-controlled locations.

LADOT and LAPD considered a number of issues in selecting intersections for PRL enforcement. Though public safety was the primary goal of the program, LAPD stated they had to consider other logistical and practical factors, such as public perception, Council support, limited funding, and jurisdictional control. These considerations eliminated some locations from the program with higher numbers of collisions and injuries.

[7] This "engineering analysis" of an intersection is not to be confused with an "Engineering and Traffic Survey" described in the California Vehicle Code sections 627 and 40802.

For example, we noted that LAPD considered but did not select the intersection of La Brea Avenue and 6th Street for PRL enforcement. Between 2003 and 2005, that intersection had 11 traffic collisions where a red light violation was the Primary Collision Factor (PCF), and at least one fatality.

Another intersection not selected for automated enforcement was Havenhurst & Nordhoff, where LAPD reported thirteen traffic collisions with red light violations as the PCF, as well as one fatal and one serious injury collision.

Conversely, LAPD did select the intersection of Whittier Blvd. and Lorena Street, where there had been only two traffic collisions over the same time period where a red light violation was the PCF, and no fatalities or serious injuries.

These three locations are located in separate Council Districts. The exclusion of the first two resulted directly from ensuring a "citywide" coverage and the associated priority to install at least one, but generally two PRL systems in each Council District.

Recommendation:

1. **LAPD and LADOT should increase transparency for an expanded PRLP by publicizing how the location selection process will ensure that the highest risk intersections are selected for the program. In addition, LAPD and LADOT should list intersections that meet published criteria, on their websites.**

2. **LAPD and LADOT should obtain CalTrans approval to automate enforcement of intersections that meet selection criteria.**

3. **LAPD and LADOT should seek funding for necessary infrastructure modifications at intersections that meet selection criteria.**

Finding #2:Location decisions did not involve engineering analyses that formally documented the City's consideration of other solutions that could have a more direct effect on public safety than automated enforcement.

Both LAPD and LADOT seek to improve public safety, but they use different methods. LADOT works to reduce or avoid problems with better street design and traffic rules; while LAPD works to moderate driver behavior and increase driver compliance with traffic laws.

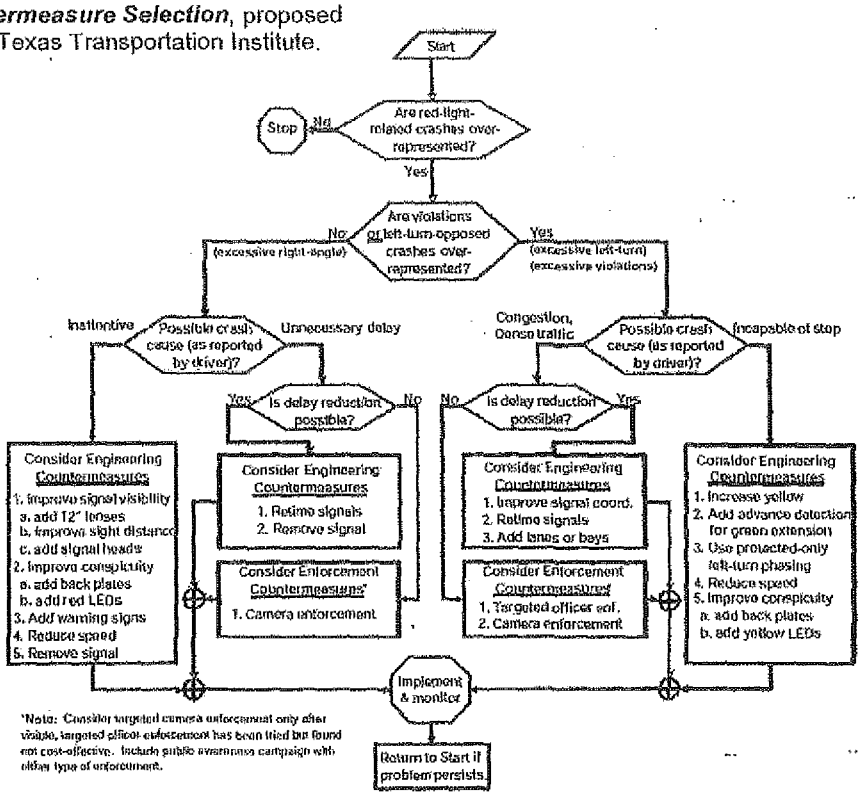
Best practices recommend that jurisdictions implementing a photo enforcement program consider first if other solutions would have a more direct impact to public safety, such as a change in approach speed, newer technology, or engineering redesign.

Traffic engineers who specialize in intersection design and signage should evaluate intersections for possible improvements and subsequently report continuing problems to law enforcement. Studies we reviewed suggest that a DOT engineering survey or evaluation should precede referring an intersection for automated enforcement. Any enforcement method should be the last resort for increasing public safety.

LAPD conducted field inspections of candidate intersections, and provided their preliminary ranking to LADOT for review. LADOT explained their role was to identify for deletion those intersections where PRL enforcement may not be appropriate, due to proposed engineering solutions and/or inherent physical site challenges. However, this process was informal and not documented. It should be noted that LADOT received no funding to participate in the intersection selection process.

A 2004 study sponsored by the Texas DOT and the Federal Highway Administration presented guidelines for identifying problem intersections and whether enforcement or engineering countermeasures are appropriate. The study stated that based on the data related to the violation's cause, either enforcement or engineering countermeasures would likely be of most benefit. The study also proposed a series of decision criteria, depicted by the flowchart in Exhibit 2, to determine when camera enforcement would be of most benefit.

Exhibit 2: ***Guidelines for Countermeasure Selection***, proposed by the Texas Transportation Institute.



The Texas Transportation Code states that a county, municipality, or other local entity authorized to enact traffic laws under the laws of the state (local authority) that wishes to install a red light camera system must take preliminary steps before the system can be installed for use. First, an engineering analysis of the approach to the intersection must be made to determine whether in addition to or as an alternative to the system, a design change to the approach or a change in signalization may reduce the number of red light violations. A completed Texas DOT engineering analysis template is specific for each location proposed for automated enforcement, and must detail:

- Intersection and Signal data (i.e., signal visibility; pavement and markings data, diagrams)
- Signal timing and traffic data (i.e., clearance intervals, controller settings, vehicle detection data, traffic volume data)
- Crash and enforcement data (i.e., specific type and severity of collision types, violation rates, enforcement and operational issues, etc.)

Engineering Safety Analysis Guidelines prepared by the Virginia Department of Transportation also require active involvement of traffic engineers and require completion of a similar engineering analysis template.

Virginia legislation also requires that localities submit a list of intersections for photo enforcement to VDOT for final approval. VDOT has established engineering safety analysis guidelines to assist jurisdictions in preparing photo enforcement request submittals. The engineering safety analysis should include a statement explaining why photo enforcement is proposed for a specific intersection, and also requires the engineering safety analysis to be stamped and signed by a licensed professional engineer.

As stated in Finding #1, the State of California also requires a formal engineering study be performed for State-owned intersections, prior to submission to Caltrans for approval of an automated enforcement system. Though a specific template is not provided, representatives directed auditors to a 2005 Institute of Transportation Engineers Field Guide for Inspecting Signalized Intersections to Reduce Red-Light Running, sponsored by the U.S. Department of Transportation.

LAPD and LADOT stated they worked together to identify and prioritize locations; however, neither could provide documentation noting the extent of LADOT's participation, or the outcome from the field visits to each proposed location. It should also be noted that LADOT resources dedicated to the PRLP are very low, namely 10% of one employee's time, versus the six full-time and two part-time LAPD employees.

A completed engineering analysis template provides a formal record that countermeasures have already been considered, and the jurisdiction has determined that there would be no additional benefit from implementing engineering solutions, and therefore concludes that an enforcement solution would have the maximum increase to traffic safety. Such potential countermeasures could include:

- Adding 'signal ahead' signs, with or without flashers; adding additional signal heads, e.g., one head over each lane; use LED lighting; 12-inch signal lamps and backplates, all designed to improve signal visibility

- Improving pavement markings and/ or pavement condition, including grade of approach.

- Ensuring appropriate clearance intervals (e.g., extended yellow light timing and all red intervals), evaluation of timing, phasing, and coordination with other intersections, an evaluation of loop detector locations, and intersection volume count for both the number of passenger cars and heavy vehicles.

LADOT representatives stated that they had not documented their meetings with LAPD or their internal processes during the intersection selection process, nor did they complete a written engineering safety analysis for each proposed intersection, citing a lack of funding for this endeavor.

LADOT asserts that they routinely incorporate proactive traffic engineering measures to maximize safety at intersections. LADOT stated that Los Angeles is at the forefront in implementing traffic signal upgrade programs and in responding to concerns at individual locations. In addition, LADOT stated their internally established rigorous traffic signal design guidelines meet or exceed requirements set forth in both the State and federal Manual on Uniform Traffic Control Devices, and therefore, many of the countermeasures recommended by the FHWA noted in Exhibit 2 have been the design standards used for years by LADOT.

Though LAPD led the process of selecting intersections for automated enforcement, LADOT's suggestions regarding which intersections to include (or exclude) were considered. For example, we noted that based on LADOT's recommendation, the intersection of Sunset Blvd. & Crescent Heights Blvd. was not included in the PRLP, despite a high number of collisions, because an engineering solution was being pursued. We observed the specific engineering drawings for that location dated October 2007 that showed signal improvements consistent with engineering countermeasures designed to improve intersection safety.

LADOT believes their current citywide procedures and their review of the proposed PRLP locations generally considered the applicability of possible countermeasures. Though LADOT's participation in the program is limited in terms of time and funding, a formal engineering analysis, or simply the completion of a standard recommended template for each location, would definitively document how engineering solutions were considered, and determined not to be more effective than photo enforcement in increasing safety at those locations. However, in considering new locations for an expanded PRLP, LAPD and LADOT should consider utilizing the template developed by Virginia and Texas for this purpose (sample template provided as Appendix D).

Recommendation:

4. **For any new intersection recommended in an expanded PRLP, LADOT should complete an engineering analysis template to formally document consideration of all appropriate countermeasures, and to support the recommendation that automated enforcement would have the greatest impact to improving public safety at that location.**

Finding #3: The data presented by LAPD in their evaluation of the Photo Red Light Program, is inadequate to show a significant increase in public safety.

LAPD has reported PRLP success by noting that no fatalities have occurred at intersections monitored in the PRLP since April 2006. LAPD also cites declining numbers of traffic collisions where a red light violation was the Primary Collision Factor (PCF) at PRLP intersections.

However, without a formal engineering survey, attributing these results solely to automated enforcement is questionable. For example, we learned that LADOT instituted an all-red phase at PRL intersections, along with the camera installation. That change alone could have made the intersection safer.

We noted other concerns regarding the completeness and type of data that is collected. Other factors that affect reported program results are not considered. Taken together, these issues cloud the value of reported outcomes.

Counting the number of traffic collisions (TC), fatalities, or severe injuries to measure progress towards LAPD's goal of increasing safety requires data. The information underlying collision data is gathered manually on paper forms, and the quality and comprehensiveness of information varies.

Officers record available details of traffic collisions on written collision reports. Information is obtained either at the scene of the collision, through later interviews, or by examination of written or physical evidence. The process is labor intensive, and includes multiple levels of review to help minimize errors.

The forms LAPD officers use for this purpose are primarily California Highway Patrol forms that provide a standardized way to record extensive information, when that data is available. After manual completion, LAPD enters some of the data into an LAPD database accessible citywide. LAPD also scans the hardcopy forms into a separate image database.

In addition, personnel at each of the four traffic divisions enter some of the data into different databases designed and maintained separately at each of the four traffic divisions. Although some divisions enter additional fields, the data collected is not standardized beyond the mandatory information required by the State. LAPD has historically reported PRLP results by summarizing collision data from these four separate ad hoc databases.

LAPD does not copy the Type of Collision from these forms into their databases. Collision types include head-on, broadside, and rear end, among others. Broadside collisions, also known as angle or t-bone collisions, are considered the most dangerous result of a red light violation, because of a side impact occurring between vehicles traveling at high speed. Ready access to this information would improve reporting on the outcomes of the PRLP.

Risk of Incomplete Data - Unreported Collisions

LAPD officers are unlikely to witness a traffic collision, though they will respond when or if they are called to the scene. However, even when responding they may not file a collision report.

Collisions are only included in the LAPD databases if a report is completed. Collisions where there is property damage only, and there is no crime involved (i.e., hit and run), do not meet LAPD reporting criteria. Although LAPD may be dispatched to such an incident, a report will generally not be taken. Also, motorists, passengers, or bystanders who are witnesses may not immediately inform LAPD of a collision, and therefore, no officer would be dispatched. Some individuals may instead report the collision to the California Department of Motor Vehicles or to the California Highway Patrol.

Even for those collisions reported to LAPD, patrol officers who do not specialize in traffic enforcement may arrive at the scene after parties to the collision or other witnesses have left or were transported for treatment of injuries. Therefore, an officer may lack adequate information for a complete report.

Risk of Not Measuring the Right Data

Historically, LAPD considers the following data, when assessing PRLP results:

- Location, i.e., if the collision occurred at an intersection with automated red light enforcement (*Note: all traffic collisions are assigned to the nearest intersection, regardless of the specific location along the block, on public street or private property, or the cause).*
- Primary Collision Factor. This is the California Vehicle Code (CVC) section a driver violated that was considered by the officer as the primary cause of the collision. Typically, in reporting program results, LAPD has reported collisions where the PCF is either 1) CVC 21453(a), running a red light; 2) 21801(a) Unsafe Left Turn; 3) 22350 Unsafe Speed; 4) 22107 Unsafe Turning Movement; 5) 21658(a) Unsafe Lane Change; 6) 23152(a) Driving Under the Influence; or 7) Following Too Close.

However, this method is also limited, since other PCFs that may have been relevant to the program, and the type and severity of the collision are not considered.

We noted that LAPD does not currently measure or report the number of right-angle or "broadside" collisions. Generally, studies we reviewed indicated that the prevention of right-angle collisions is regarded as the prime target in photo red-light programs, as other crashes (i.e. rear-end collisions) carry a lower risk of causing serious injury.

Another consideration is the ratio of late straight-through violations compared to violations that occur within the first second after the change from yellow to red.

PRL cameras measure violations to the thirtieth of a second, and make it possible to consider this criterion in evaluating intersections in the PRLP.

A newer, automated system for documenting traffic collisions has been in development for more than a year and is currently piloted in the Central Traffic Division. When fully implemented, this system could facilitate more precise analysis of collisions that involve red light violations at PRLP intersections. However, full implementation of that system is not assured.

The State of Texas noted similar data difficulties in a report on automated enforcement: *Development of Guidelines For Identifying And Treating Locations With A Red-Light-Running Problem*. That report states:

> There are several challenges to the accurate identification of red-light-related crashes. Such crashes are not explicitly identified on the crash report forms used by most states. As a result, the identification of red-light-related crashes requires a thorough review of the crash report with consideration given to the following crash attributes: contributing cause, crash type, traffic control, and offense charged. The officer narrative and crash diagram also provide important clues to the cause of the crash.
>
> Unfortunately, the narrative and diagram are rarely available in a coded crash database. This sole use of a coded database can lead to errors.

This accurately describes LAPD's coded traffic collision databases. Because much of the raw data is not available in a searchable format, obtaining comprehensive and quality information on traffic collisions at PRLP sites is difficult to produce.

We reviewed information provided by LAPD on traffic collisions at PRLP intersections over calendar years 2004 to 2009. We compared the summary results by intersection to the detailed collision data that we independently obtained from the four traffic divisions' databases. Exhibit 3 presents a summary of that data. Though we found no significant discrepancies in what LAPD had reported, based on concerns regarding the completeness and relevance of the data collected, the success of the PRLP cannot be judged solely on these reported statistics.

Exhibit 3

LAPD Traffic Collision Statistics related to the Automated Photo Red Light Program
Citywide Totals, based on the 32 Program Intersections

			LAPD Primary Collision Factor, considered "cause" of the Collision							
Year	Total T/C	% Change	Red Light 21453A	% Change	Left Turn 21801A	% Change	Speed 22350	% Change	FTC 21703	% Change
2004	376	N/A	107	N/A	122	N/A	107	N/A	40	N/A
2005	351	-6.6%	99	-7.5%	113	-7.4%	112	4.7%	27	-32.5%
2006	297	-15.4%	69	-30.3%	98	-13.3%	110	-1.8%	20	-25.9%
2007	302	1.7%	50	-27.5%	104	6.1%	111	0.9%	37	85.0%
2008	338	11.9%	30	-40.0%	130	25.0%	135	21.6%	43	16.2%
2009	322	-4.7%	46	53.3%	116	-10.8%	119	-11.9%	41	-4.7%
Total	**1,986**	**-9.2%**	**401**	**-63.1%**	**683**	**4.7%**	**694**	**16.0%**	**208**	**25.4%**

Note: % Change by year compares T/C counts to those in the prior year. The Total % Change over the five year period was calculated as the sum of T/Cs in 2004 and 2005, compared to sum of T/Cs in 2008 and 2009.

Media Report Prompted a More Detailed Analysis

In November 2009, an investigative reporter challenged LAPD statistics on PRLP results. LAPD disputed the reporter's findings and invested significant time and effort to conduct a more comprehensive analysis of traffic collisions than they had ever done before.

Specifically, an experienced traffic officer reviewed in detail images of the paper forms for all collisions of record that were classified at or near every PRLP intersection over the specified period. This new LAPD analysis showed mixed results: 12 out of 32 intersections had worse collision results in the six months after activation of PRL equipment compared to the six months before activation. Four had no change, and the remaining 16 noted a reduction in collisions. Exhibit 4 provides a summary of LAPD's more detailed analysis.

We reviewed the process and methodology LAPD used in their analysis, and found it would provide more comprehensive program information than had previously been reported.

However, it should be noted that since the total number of collisions was so small at most intersections, the results may be rendered meaningless. Most intersections had fewer than five collisions before or after activation of PRL equipment. Therefore, a difference of one collision either way could make an intersection look much better or much worse. Also, since some locations included in the program were not those with the greatest potential impact for improved public safety (as noted in Finding #1), the reduction in total collisions would not have been maximized.

LAPD intentionally limited this more comprehensive review of collisions at the 32 locations to a six-month before and after timeframe, in order to produce comparative results to the media report. Both LAPD and LADOT agreed with the auditors that these outcome results may not be reflective of the program as a whole. LAPD stated they would like to perform a full 2-year study; however, the additional efforts involved in that analysis would be significant.

Recommendations:

5. **LAPD should modify the method by which the PRLP is evaluated by ensuring complete and relevant data that supports the type of enforcement, i.e., right turns or straight-through violations.**

6. **Over the long term, LAPD should pursue the full implementation of the planned integrated system to electronically record all relevant collision information, making it more easily accessible for data analysis and program evaluation.**

7. **In the short-term, LAPD should expand their data collection from collisions at PRLP intersections. Rather than relying solely on key data fields captured by division databases, consider the information included in written collision reports and video images of the collisions that may be captured by the PRLP system, for example:**

   - **Collision type (broadside, rear-end, etc.)**
   - **Time into red**
   - **Speed of the vehicle**
   - **Movement preceding collision**
   - **Feet from the intersection**

8. **Because the PRLP seeks to modify risky behavior by ensuring compliance with traffic laws, LAPD should also assess the program results in terms of the rate of violations or citations issued through the PRLP by intersection approach. An expected outcome for a successful program would show that violations at a given location decrease over time.**

Exhibit 4

Los Angeles Police Department
Photo Red Light Collision Data
(+/-) 6 months from Activation Date

Source: Summarized results of LAPD detailed analysis, included in report to LAPD Commission dated March 9, 2010.

Intersection	Activation Date	Prior	After	Diff	% Change
La Brea / Rodeo	2006 Apr 04	6	4	-2	-33%
Victory / Laurel Canyon	2006 Jun 08	9	8	-1	-11%
DeSoto / Roscoe	2006 Aug 07	4	2	-2	-50%
Sepulveda / National	2006 Aug 15	0	2	2	200%
Van Nuys / Nordhoff	2006 Sep 28	5	6	1	20%
Main / Griffin	2006 Nov 20	1	1	0	0%
Vernon / Broadway	2007 Feb 07	9	4	-5	-56%
Balboa / Vanowen	2007 Mar 08	5	5	0	0%
Western / Washington	2007 Mar 29	3	7	4	133%
Pico / Bundy	2007 May 02	4	3	-1	-25%
Sepulveda / Victory	2007 May 10	4	4	0	0%
Sherman Way / Louise	2007 May 14	5	6	1	20%
Whittier / Lorena	2007 May 23	0	2	2	200%
Coldwater Cyn / Oxnard	2007 Jun 25	4	6	2	50%
Manchester / Airport	2007 Aug 09	2	4	2	100%
Sunset / Cahuenga	2007 Aug 09	4	3	-1	-25%
Van Nuys / Arleta	2007 Aug 17	2	1	-1	-50%
Normandie / Gage	2007 Sep 26	1	6	5	500%
Manchester / Figueroa	2007 Dec 05	5	4	-1	-20%
Wilshire / Westwood	2007 Dec 12	2	0	-2	-100%
Western / Beverly	2006 Oct 10	4	6	2	50%
Grand / Venice	2007 Jun 07	1	2	1	100%
Alvarado / Temple	2007 Nov 29	5	3	-2	-40%
Soto / Olympic	2006 Sep 01	8	4	-4	-50%
Imperial / Figueroa	2006 Oct 19	6	5	-1	-17%
Florence / Figueroa	2006 Nov 20	2	4	2	100%
Olympic / Highland	2007 Jun 18	5	1	-4	-80%
M.L. King / Western Ave	2007 Jul 05	10	8	-2	-20%
Olympic / Alvarado	2007 Jul 19	1	1	0	0%
Century / Figueroa	2007 Oct 16	11	5	-6	-55%
Alameda / Cesar Chavez	2007 Nov 02	4	1	-3	-75%
Anaheim / Wilmington	2007 Nov 19	1	3	2	200%
	TOTAL:	133	121	-12	-9%

Finding #4: Other factors that may be responsible for a reduction in Traffic Collisions have not been considered in reporting program results.

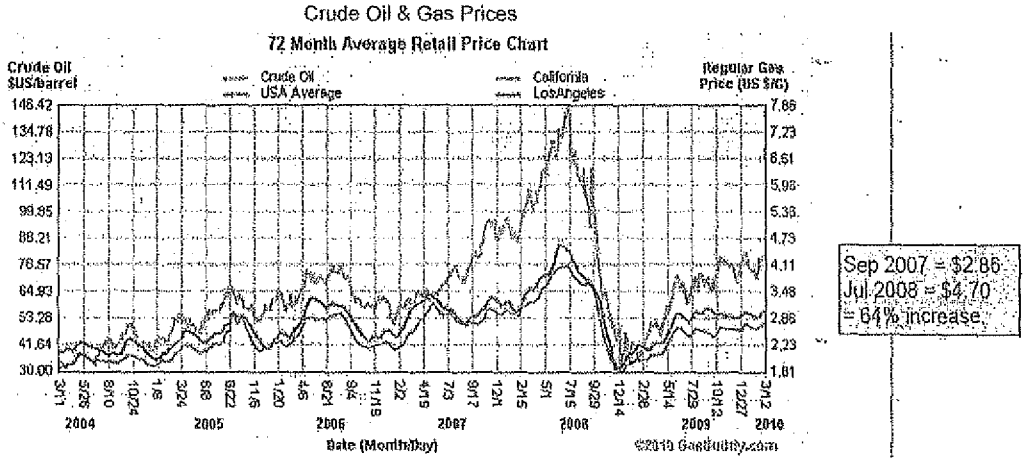
LAPD reported that traffic collisions at PRL intersections declined from 107 in 2004 to 30 in 2008—a 72% decline—but then increased 53% to 46 collisions between 2008 and 2009 (as previously noted in Exhibit 3). Our review disclosed that LAPD does not consider all factors in reporting the program's results. For example, LAPD does not include the relative changes in overall number of citywide collisions.

Citywide Traffic Collisions Have Declined

LAPD reported that citywide traffic collisions of all types declined from 48,958 collisions in 2008 to 44,307 collisions in 2009.[8] While trends in citywide collisions cannot be directly adjusted to those related to the PRLP, such trends should be considered in any comparative analysis.

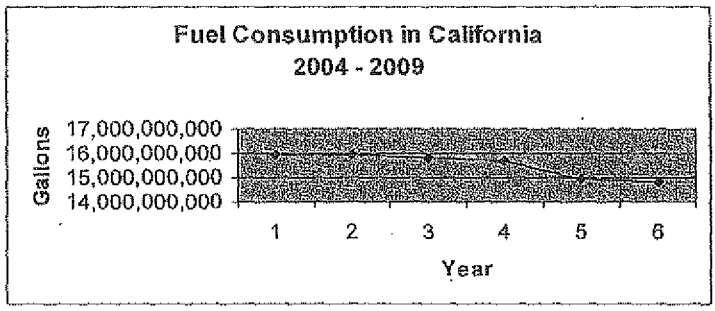
A general reduction in collisions could have been the result of there being fewer cars on the road, due to a significant increase in fuel prices. We noted over a ten-month period, average gas prices rose by 64% (Exhibit 5). We also noted there was a 4.6% decline in statewide fuel consumption that year (Exhibit 6), as well as a 2.6% decline in traffic volume on State highways in LA County.

Exhibit 5



[8] COMPSTAT Report for the week ending December 19, 2009.

Exhibit 6



LAPD has not historically reported fluctuations in traffic collisions at photo red light intersections in the context of trends in citywide traffic collisions. For example, an LAPD CompStat Report issued in late December 2009 shows a 9% decline in 2009 traffic collisions from the prior year, and a 14% decline in traffic collisions over the prior two years. Failure to report PRL results in context with broader citywide results could be misleading.

Weather patterns also affect collision trends over time. Precipitation affects visibility and traction, increasing hazardous driving conditions. Therefore, fluctuations in the number of rainy days in a given year can also affect the number of collisions. LAPD and LADOT stated that due to the moderate and mostly dry climate in Los Angeles, they do not believe weather should be considered a cause for any fluctuations in the number or severity of traffic collisions.

Without considering the context of citywide traffic collisions (including citywide collisions involving a red light violation), or other factors such as changes in traffic volume or weather conditions, the reported program results measured as the change in the number of traffic collisions at PRL intersections may not be adequately attributed to the program. At a minimum, traffic volume should be considered as a common denominator when comparing relative numbers of violations and collisions.

Variations in Traffic Volume Should be Considered

LAPD does not measure traffic collisions in relation to traffic volume, i.e., collisions per 10,000 vehicles. Fluctuations in traffic volume can directly influence the number of citywide traffic collisions, but LAPD indicated they were not monitoring traffic volume—either citywide or at PRL intersections.

A Texas study emphasized that traffic volume data are needed to represent exposure. The study noted that annual average daily traffic (AADT) and the volume-to-capacity ratio (level of congestion) are important considerations in analyzing intersection safety. Again, up until now, LAPD has not incorporated traffic volume or relative congestion data in reporting the program's results.

A study reported in a 2007 Status Report of the Insurance Institute of Highway Safety (IIHS) also refers to collisions per 10,000 vehicles as a key metric.

The Center for Transportation Research and Education at the Iowa DOT reports on violations per 1,000 vehicles entering an intersection, the number of violations per hour, and the seconds into the red for violations.

According to the Virginia DOT, the primary measures for assessing the automated enforcement program are the number of red light violations per 1,000 vehicles on an approach, and the collision rates measured per million vehicles entering at an intersection, with an additional measure that considers a reduction in broadside collisions.

In another report the Virginia DOT further stated:

> Traffic count data are also important to highway safety personnel, as they are frequently used in conjunction with accident statistics to produce traffic accident rates. These rates are important indicators of accident probabilities and are frequently used to identify hazardous locations. It is, therefore, imperative that the traffic counts be accurate indications of traffic volumes and VMT [Vehicle Miles of Travel].[9]

LADOT provided some historical data on traffic volume at PRL intersections, but the data could not be used for comparative or trending purposes, since it was not gathered in a statistically useful manner. That is, traffic volume counts were noted on single dates ranging from November 2003 through November 2009, with no more than two days counted for each location. Although LADOT monitors citywide traffic volume to adjust signal timing each day, that data is not permanently stored.

Current technology used by LADOT for congestion management allows the measurement of lane-by-lane traffic counts almost continuously, though the data is retained only for a brief time. Traffic volume can be estimated based on a systematic method of automated counts for a given period. The PRLP equipment itself could also be used to measure traffic volume at program intersections. Therefore, the City may have more extensive traffic volume information available, though it is not considered in evaluating the PRLP.

Recommendation:

9. **In coordination with LADOT, LAPD should consider, at a minimum, the effect of traffic volume in the comparative metric in reporting and measuring program results. Specifically:**

   a.) **The number or ratio of traffic collisions at monitored intersections (considered through implementation of recommendations 6 and 7) compared to the number of**

[9] Garber, N.J., Bayat-Mokhtari, Faramarz. *"Optimizing Traffic Counting Procedures."*

vehicles transiting a single approach. A successful program outcome would note a decline in the adjusted ratio.

b.) The number or ratio of violations at monitored intersections (considered through implementation of recommendation 8) compared to the number of vehicles transiting a single approach. A successful program outcome would also note a decline in the ratio.

SECTION II: THE PROGRAM'S IMPACT ON CITY FINANCES

Finding #5: The Program has not covered its operational costs nor generated additional revenue for the City.

LAPD has reported that the PRLP generates millions of dollars of net revenue for the City. In addition, there is a public perception that the program brings in additional funds for the City, and critics have alleged that this revenue aspect of the program, rather than public safety, is the primary objective of automated enforcement. LAPD expressly rejected this allegation, stating that traffic safety is the ultimate goal and highest priority of the PRLP.

Our audit found that previous reports by LAPD on the revenue impact of the program were overstated. In some reports, LAPD considered actual citations paid by violators (as reported by the Court) as revenue. However, these figures were misleading, since the majority of fines paid to the Court for red light violations are not received by the City. In fact, of the $446 fine amount, the City was entitled to receive only $157, or 35% of that amount. Exhibit 7 below presents the fine amounts for a red light violation over a four year period, and the proportionate allocation of the fee.

Exhibit 7

Los Angeles Police Department
Automated Photo Red Light Enforcement Program

City Share of Citation Fine Revenue

Citation Info	2006		2007		2008		2009		
CVC Sections Cited	21453(a)CVC	21453(b)CVC	21453(a)CVC	21453(b)CVC	21453(a)CVC	21453(b)CVC	21453(a)CVC		
Total Cost Fine	$361.00	$161.00	$381.00	$159.00	$381.00	$158.00	$436.00	$446.00	$446.00
City Share	$151.31	$55.90	$157.19	$58.25	$157.19	$58.25	$148.37	$148.37	$157.19
County Share	$54.51	$22.13	$68.23	$27.62	$68.23	$27.62	$68.23	$67.23	$74.11
State Share	$155.18	$72.97	$155.58	$73.13	$155.58	$73.13	$219.40	$229.40	$214.70
Traffic School Fee	$39.00		$39.00		$39.00		$64.00		

NOTE 1: During the years 2006 to 2008, LAPD cited straight-through red light violations under section 21453(a) of the California Vehicle Code (CVC), and right-turn red light violations under CVC section 21453(b). Starting 1 Aug 2008, LAPD cited all red light violations under CVC section 21453(a).

NOTE 2: Changes to State law resulted in changing amounts and allocations of fines in 2009.

LAPD has also reported the City's PRLP fine revenue by multiplying the total number of citations issued by the City's share of fine revenue. However, this method would also overstate revenue because it ignores Court records of dismissing or otherwise receiving no payment for 24% of citations adjudicated in 2009. In addition, many citations are sent for collection by the Court, but may never be paid. The Court may also adjust fine amounts or assign community service, based on a defendant's economic circumstances.

Fine Revenue

The Superior Court collects bail or fines from traffic citations issued by cities within the Court's jurisdiction. The Court distributes this revenue to the State, the County, the cities, the Court, and any other recipients designated by statute.

Every month, the Los Angeles Superior Court deposits the City's portion of Court fines into a City account. In 2009, the Controller's Office conducted an assessment of the procedures used by the Court to allocate fine revenue to the City. Our review noted no exceptions. However, documentation the Court provides does not break out photo red light citation fines from the total traffic fine revenue paid to the City.

In lieu of a deposit breakdown, the Court provides the City with a monthly report titled "Estimated & Unadjusted Red Light Camera Revenue & Payment Transaction Counts." The Court labels this report "Estimated & Unadjusted" because of timing issues in assigning revenue to a specific period. However, this report provides the most accurate information available relative to payments made for PRLP citations issued, and is considered a reliable source for the total PRLP amounts due to the City, after one final adjustment.

Per Government Code §72712, for the three jurisdictions that formerly comprised the Los Angeles Judicial District,[10] the Superior Court deducts an additional proportionate amount for the Reporters' Salary Fund, which is maintained by the Court. This final adjustment reduced the City's receipts from the Court by an average of 18% during both 2008 and 2009.

Our revenue calculations are derived from the payments to the Court, and the Court's subsequent transfer to the City. LAPD believes this understates program results because they learned during the course of our audit that a significant number of citations from prior years are not yet resolved or "adjudicated" by the Court. LAPD stated that those unresolved citations could eventually bring in additional revenue.

For example, LAPD stated that 39% of citations issued in 2008 had not yet been resolved over one year later; and 52% of citations issued in 2009 remain unresolved in early 2010. However, we noted that based on 2009 data provided by the Superior Court, only $307,000 (2.7%) and $21,000 (0.2%) of Court revenue were from violations more than one and two years prior to the adjudication date, respectively.

During the course of our audit, LAPD also became aware that the Court does not ask DMV to place a hold on the vehicle registration or the driver's license of PRL citation recipients who do not respond to a PRL Notice to Appear. Instead, the Court sends these citations to a collection agency. Therefore, future collectability

[10] City of Los Angeles; City of San Fernando and the County of Los Angeles.

of delinquent PRL citations is even less certain, which may explain the large number of outstanding citations.

We do not agree that unresolved or unpaid citations issued in prior years should be considered as collectible revenue in the year they were issued. Any significant timing delays between when a citation is issued and when it is paid would be reflected during the year it was paid, and the timing difference would smooth out over time. Also, the number of citations that will never be paid, and are therefore "uncollectible," is unknown.

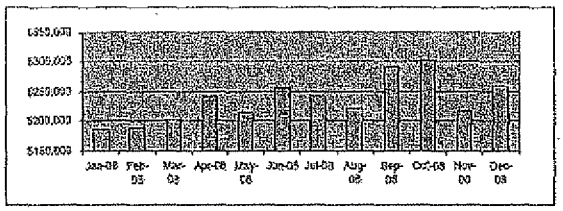
From a cash-basis accounting perspective, which is consistent with the method by which the City recognizes revenue, the Court's monthly revenue reports, adjusted by an 18% deduction for the Reporters' Salary Fund, are considered a reliable source for recognizing the amount of actual cash received by the City.

Exhibits 8 and 9 present a summary of the City's allocated share of Court revenue for 2008 and 2009. These amounts do not include a further 18% deduction for the Reporters' Salary Fund as required by GC §72712.

Superior Court Payments to the City of Los Angeles
Allocated Share of Photo Red Light Revenue
2008

Exhibit 8

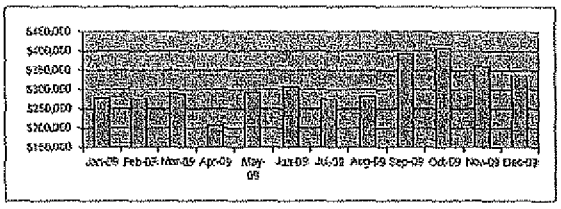
Date	Revenue	% Avg	Tickets	% Avg
Jan-08	$ 187,753	79%	2,488	86%
Feb-08	189,095	80%	2,311	83%
Mar-08	204,424	87%	2,488	89%
Apr-08	243,404	103%	2,934	101%
May-08	216,858	91%	3,004	107%
Jun-08	255,663	108%	3,212	115%
Jul-08	243,958	103%	3,207	115%
Aug-08	222,078	94%	2,899	104%
Sep-08	292,248	124%	3,405	122%
Oct-08	303,394	128%	3,109	111%
Nov-08	217,690	92%	2,198	78%
Dec-08	259,370	110%	2,442	87%
Total	$ 2,836,715		33,567	
Average	$ 236,273	100%	2,800	100%
Max	$ 303,394		3,405	
Min	$ 187,753		2,188	



Superior Court Payments to the City of Los Angeles
Allocated Share of Photo Red Light Revenue
2009

Exhibit 9

Date	Revenue	% Avg	Tickets	% Avg
Jan-09	$ 277,665	90%	2,517	86%
Feb-09	275,603	89%	2,975	90%
Mar-09	290,875	94%	2,880	98%
Apr-09	208,589	68%	2,012	76%
May-09	292,058	95%	2,491	94%
Jun-09	305,290	99%	2,613	89%
Jul-09	275,695	89%	2,381	90%
Aug-09	283,700	92%	2,369	89%
Sep-09	392,173	127%	3,152	120%
Oct-09	405,848	131%	3,281	125%
Nov-09	351,675	113%	2,971	113%
Dec-09	334,347	108%	2,856	108%
Total	$ 3,702,549		31,612	
Average	$ 308,712	100%	2,634	100%
Max	$ 405,848		3,281	
Min	$ 208,589		2,012	



City Costs for the Photo Red Light Program

As part of our overall program evaluation, we also assessed the City resources dedicated to the program. Those include payments to the vendor and the costs of dedicated LAPD and LADOT staff who install, monitor, and manage the program. The table below presents the estimated annual costs incurred by the City to implement the current PRL program:

Contract Costs	Based on current maximum payments to the vendor to monitor 32 intersections (63 approaches at $4,062.50 each, assuming a 80% CIR)	$3,071,250
Labor Costs	Salaries and fringe benefits for six full-time LAPD sworn employees assigned to program.	$791,335
	Salaries and fringe benefits for two LAPD employees assigned part-time to the program.	$32,180
	Salaries and fringe benefits for one LADOT employee who indicated he spends about 10% of his time on the program.	$17,865
Infrastructure	Amortized amount of LADOT costs related to required infrastructure improvements at 32 locations ($1.57 million, based on 4 year schedule)	$392,500
	TOTAL: City's Annual Cost of PRLP	$4,305,130

The cost figures used in this analysis are approximate. However, we consider the total amount of $4.3 million to be a conservative estimate of total annual City costs of the PRLP.

While the actual contract payments in prior years were reduced from the maximum allowable due to performance issues[11], the labor costs are based on salary ordinance amounts for the positions indicated, overtime was not considered. In addition, we did not consider the effect of LAPD management supervision or Division-, Departmental- or citywide overhead. These costs are generally included for the purpose of full cost recovery.

By comparing the City's share of citation fine revenue received to a conservative estimate of the City resources dedicated to the program, our review found that for the first two full years of PRL operations at all 32 intersections, the financial result for the City was a net loss.

[11] Some PRL intersections do not currently achieve an 80% Citation Issuance Rate (CIR) required for full compensation to the contractor for a given intersection. For 2008 this issue resulted in reduced vendor payments of $393,255, and for 2009 the reduction was $212,631. LAPD and ATS have achieved an 80% CIR if they average all 32 PRL intersections together; however, some intersections exceed that rate and some do not. LAPD and ATS continue to work towards achieving that rate for every intersection.

	2008	2009
Fine Revenue Received		
Receipts due from Superior Court	$2,835,275	$3,704,548
Adjustment for 18% deducted, per GC 72712	(510,350)	(666,819)
Estimated Revenue Received from PRLP	$2,324,925	$3,037,729
City Costs Incurred		
Vendor Cost[12]	$2,627,219	$2,857,806
Labor (LADOT & LAPD Direct)	841,380	841,380
LADOT Infrastructure Cost (4-year amortization)	392,500	392,500
Estimated Costs Incurred for the PRLP	$3,861,099	$4,091,686
Net Result (Loss):	($1,536,174)	($1,053,957)

Our analysis shows that the PRLP has not been a "money maker" for the City. It should also be noted that this issue had not been acknowledged by management or policymakers until audit fieldwork noted the significantly lower revenue figures received by the City. Our audit conclusions are also supported by other recent analyses by the CAO and CLA using the same source data.

LAPD has argued that the fine revenue reported above is understated, since there may be a significant lag between citation issuance and collection, and that most receipts in 2008 may be attributed to citations issued during 2007, when the program was not yet fully implemented. However, it should be noted that the Court's revenue figures relate to roughly the same number of transactions, as noted in Exhibits 8 and 9. Therefore, the significant increase in receipts in 2009 may be due to the higher fines imposed for "rolling right-turns," which began in 2008, and is discussed in Finding #6.

Even at a net City cost, automated enforcement could be considered a viable alternative to fielding more traffic police. PRLP is a round-the-clock enforcement effort. Comparable enforcement efforts by traffic officers posted at those intersections would be far more expensive. LAPD reports that the citations issued through the PRLP equate to over 22% of the moving violations citywide, and that it would require over 100 motor officers, with salaries alone over $10 million, to monitor the 32 PRLP intersections.

However, the decision to allocate resources to any program, either through technology or staff, should be based on an expectation that it will achieve a specific outcome. Both automated and officer enforcement efforts seek to modify driver behavior by increasing compliance with traffic laws. Such enforcement actions (or threat of enforcement) are considered most effective in cases where drivers violate the red light within one second of the change from yellow to red.

[12] Maximum vendor contract cost of $3,071,250 contractually reduced because of the low Citation Issuance Rate (CIR).

In addition, as presented in section I, the PRLP cannot conclusively show a significant impact to safety, as measured by a reduction in collisions.

Recommendation:

10. LAPD and LADOT should consider departmental priorities along with the expected outcomes of the PRLP in allocating resources to the program.

Finding #6: All PRLP violations are cited under the same CVC were assessed a $446 fine, regardless of the relative danger of the violation.

Straight-Through versus Right-Turn Violations

A California driver who fails to stop for a red light violates CVC 21453. Although that section of the code has several subsections with different penalty amounts that are set by State law, the City issues all PRL citations under subdivision (a), whether for a straight-through violation, or a right-turn violation.

The PRLP resulted in 41,224 and 44,542 citations issued in 2008 and 2009, with approximately two-thirds of the citations issued for red light violations during right turns. In August 2008, based on advice from the City Attorney, LAPD began citing all red light violations under CVC 21453(a). Previously, right turn violations at PRLP locations were cited under CVC 21453(b), which requires a driver to yield "after stopping as required by subdivision (a)." Violations that were cited under subdivision (b) had a maximum fine amount of $159, which was significantly lower than the fine amount under subdivision (a), which was $381 in 2008 but has risen to $446 as of the end of 2009 (refer to Exhibit 7).

This action nearly tripled the City's share of potential payments for two-thirds of citations issued. Several media reports and advocacy groups have called this practice of using cameras to issue citations for right-turn violations, which carries the same penalty as the more dangerous straight-through violation, as driven solely by the opportunity for increasing revenue.

Subsequent to our audit fieldwork, on September 3, 2010, the State Legislature sent AB 909 to the Governor for his signature. This bill would amend section 21453 of the Vehicle Code to re-assign turning violations to a lower fine amount.

Due to the slower speed of the vehicle during right-turns, drivers generally have control of their vehicle and if they see another vehicle or pedestrian, they are able to react and stop in time. Therefore, right-turn red light violations are generally considered less dangerous than straight-through violations. LAPD points out that collisions occurring from a rolling right-turn violation could have a greater risk of involving a pedestrian, which would be very serious.

Several California cities that cite right-turn violators say that these infractions increase hazards, especially for pedestrians. A 2006 LADOT report that analyzed traffic collisions in Los Angeles over a seven-year period reported 22,350 pedestrian collisions (or about 3,000 annually), which accounted for 7% of all traffic collisions citywide. About one-fourth of the pedestrian collisions occurred at signalized intersections, but just 4% occurred when there was a "circular red or red arrow" noted as the cited violation. There was no distinction, however, of what proportion of those collisions were caused by a right-turning vehicle. LADOT has previously stated that improper right turns had not caused a major [collision] problem, rather they reflect bad driver habits. Therefore, while PRLP right-turning violators could hit a pedestrian, Los Angeles has been "lucky in this respect."

Though enforcement against drivers who do not stop at all has the potential to make intersections safer, some jurisdictions opt not to target right turns, or record the illegal right turn only when a vehicle is going 15 mph or faster.

Timing of the Violation, and Speed of the Vehicle

Advances in video technology now make it routine to determine to the thirtieth of a second when a violation occurred and how fast a vehicle was travelling. We reviewed studies showing that 75% of straight-through red light violations occur within the first second after a signal light changes from yellow to red.

An Iowa study found that vehicles entering the intersection a second or less after the onset of the red phase may pose less of a hazard to serious crashes because of the perception, reaction, and start-up time of possible conflicting vehicles that are currently stopped at the intersection. The most dangerous violations are generally those that occur several seconds after the signal light changes to red, when deadly broadside collisions are more likely.[13]

As an enforcement tool that seeks to change risky driver behavior, the City of Los Angeles makes no distinction between straight-through or right-turn violations, nor considers the speed of the vehicle or "time into red," when issuing citations. LAPD stated the City intentionally lengthened the time for the yellow signal phase from the legally required 3.6 seconds to 3.9 seconds or higher in deference to potential violators. They estimate this effectively reduced by one-third the number of citations that would have otherwise been issued.

Furthermore, LAPD does not summarize collisions and injuries by straight-through or right-turn red light violations (previously noted in Finding #3). Without this data, the difference between the high-speed, straight-through violation and the slower, right-turn violation tends to indicate that the former are more dangerous and deserve more enforcement attention, and a more severe penalty.

[13] However, right-turn violations with a longer time into red may not be as dangerous, as these could be "rolling" right turns, as drivers slow down to view and prepare to yield the right of way.

PRLP Does Not Generally Cite Left-Turn Violations

The existing PRLP equipment installed at 32 City intersections does not adequately detect or record left-turn violations; therefore, the City does not generally issue citations for red light violations by left-turning vehicles.

Significant attention to camera placement and adjustment is typically necessary to record images of left-turning vehicles; and the design will vary based on the specific intersection's layout. LAPD stated that in some instances, when a driver crosses the limit line on red and then negotiates a left turn, the event is captured by the cameras. They also stated that if an unobstructed photograph of the drivers' face is obtained, those violations are cited.

The City chose not to install the equipment necessary to detect all left-turn red light violations, as it was decided that illegal left turns were not a significant enough problem to justify the expense.

Recommendation:

11. **Council should direct LAPD and the CLA to promote legislative action at the State to amend the CVC so that fines for red light violations reflect current technology and are proportional the to the level of danger (e.g., graduated fines, etc.).**

Finding #7: Existing Law and Recent Legislative Changes Could Significantly Decrease Program Revenue.

The PRLP has not covered its operational costs nor generated additional revenue for the City. Recent legislative changes at the state level could also significantly decrease the amounts received by the City.

PRLP Violations Cannot Be Cited as Municipal Code Violations

An inquiry by the City Council proposed that automated enforcement of red light violations be cited as Los Angeles Municipal Code (LAMC) violations, which would lead to civil fines, similar to parking tickets.

This change would significantly increase the City's share of the paid citations, while reducing the fine amount for the violator and eliminating most of the payroll costs for sworn officers dedicated to the program.

The City sets the penalty amounts related to LAMC violations. Civil citations, unlike those assessed through the California Vehicle Code, do not require that a sworn officer review video evidence of the violation prior to ATS issuing the citation.

LAPD stated they have researched this issue, and that the City Attorney concurred with their analysis that this practice is "of questionable legality," citing

the State constitution that forbids municipalities from enacting legislation that duplicates or conflicts with State law. Although questionable, some localities have reportedly enacted local ordinances for traffic violations. As a result, recent legislation (SB 949), if signed by the Governor, prohibits a local authority from enacting an ordinance that establishes a violation or related penalty fee for matters covered by the State vehicle code, unless expressly authorized.

Amended Vehicle Code Reduces the Penalty for Right-Turn Violations

As stated in the previous section, since August of 2008 LAPD has cited all red light violations, both straight-through and right-turn, under the same section of the California Vehicle Code, which carried a $446 fine as of the end of 2009. During our audit, a proposal was introduced in the State Assembly (AB 909) to significantly reduce the fine for "rolling right turns." The League of California Cities strongly opposed the bill on monetary grounds, stating that it would negatively affect cities' ability to use automated traffic enforcement tools and potentially cost the state millions of dollars in lost revenue. The California Police Chiefs Association also opposed the bill. Nevertheless, both houses of the legislature passed AB 909 by substantial majorities in late August 2010, and it will become law with the Governor's signature.

Our audit noted that approximately 67% of PRLP citations issued during 2008 and 2009 were issued for right-turns on red. Therefore, this recent legislation would have a significant effect on PRLP costs recovered by the City.

State Law Limits Photo Enforcement Safety Impact and Financial Results

Reports during our audit fieldwork indicated the Governor may work to change the State law that currently prohibits speed cameras in California. Though PRLP video cameras already detect vehicle speed, it is not with the precision required by the Court. Speed enforcement, as a supplement to the PRLP, would require additional equipment at an added cost.

It appears the State would receive the majority of additional fee revenue from citations issued by speed cameras, though the City would also retain a portion. However, it is unknown if a projected increase in City revenue related to speed cameras would be sufficient to offset additional vendor costs. The City has also not taken a position to support this proposal.

The use of speed cameras is highly unpopular among some citizen groups. Though the State of Arizona has used camera enforcement to ticket speeding motorists on highways, it plans to end the practice soon.

LAPD also stated that the existing PRLP equipment currently detects numerous other violations that impact driver safety and if cited, would result in additional penalties or fines. For example:

Moving/Safety Violations:
23123 Cell Phone (extremely common)
27315 Seatbelt not worn (very common)
22100 Turning from improper lane / position (fairly common)
22108 Turning without signaling (last 100 feet) (extremely common)
27360 Child Restraints
14601 Driving on a suspended license
23103 Reckless Driving
27400 Headset in both ears
21658 Lane straddling
21700 Obstructed View by passengers or load
21950 Failure to yield to pedestrian in crosswalk
12500 Unlicensed Driver
23109 Speed contest

Equipment Violations:
5200 License plate not attached (either front or rear)
4000a Expired Registration

Others:
21712 Unlawful riding (e.g., passenger in pickup bed)
21806 Failure to Yield to Emergency Vehicle

Current State law[14] prohibits the use of photographic records made by an automated enforcement system for any purpose other than as evidence supporting a red-light violation. Therefore, a change to State law would be required to allow automated enforcement of these violations.

[14] CVC 21455.5 (e)

SECTION III: CONTRACT OVERSIGHT AND MONITORING

Finding # 8: The City relies on the vendor to ensure a complete reporting of all photo red light events, potential and LAPD approved violations, and actual citations mailed to violators, without ensuring completeness of the data.

For each vehicle entering a monitored approach, the PRL system detects vehicle speed and position and compares that information to the signal light timing to predict whether the vehicle will likely enter the intersection on a red light. When the system predicts such a violation, it triggers an "event." Video cameras feed video recorders for several seconds, and still cameras and flash units activate in sequence to record the event, which may indicate a violation and ultimately result in a citation.

There is a low risk that potential violations are not captured by PRL system. While our audit did not assess the functionality of the PRL equipment, we assessed controls in place to ensure that the installed systems did work as intended. Though the vendor provided no formal study to support the ability of the system to comprehensively capture all violations, we noted that LAPD did some "ground-truthing" upon system installation, and we reviewed evidence that the City complies with required periodic certification that PRL equipment functionality conforms to State requirements.

LAPD is of the opinion that the equipment does not miss violations. However, there remains a risk that some events captured by the system may not be reported to the City, or that officer-approved citations are not timely mailed to violators.

The City lacks assurance that events, once captured by PRLP cameras, are transferred and remain in the vendor's database, and that all such events are reported to LAPD.

An impending red light violation activates the equipment monitoring a particular approach to record a date- and time-stamped "event," which is unique for that approach. Events are then digitally transferred and stored on remote ATS servers for initial review by ATS. ATS reviews each event to determine whether the photographic evidence meets preliminary violation criteria and, if so, uses the license plate number to obtain registration information from the California Department of Motor Vehicles (DMV).

If ATS determines the event would not support a citation, they note the exemption reason and store these events as "discards," which are not sent to LAPD for review, but remain available for an LAPD quarterly audit.

While LAPD maintains overall control and supervision of the process, the PRLP data is stored on ATS computers. ATS personnel have system-level access to event data from the moment of capture by the cameras through inclusion of the images in the ATS database and submission of the images to LAPD for approval.

If all events captured by the cameras are not included in ATS' database, there is a risk that some valid violations would never result in citations, or, conversely, invalid violations would not be counted appropriately as discards, which would misstate the Citation Issuance Rate (CIR), and affect the payment to the vendor.

For example, ATS reported that event numbering occurs after their system transfers event data to a central server. Without traceable event numbering in the roadside equipment, a roadside computer failure could result in the loss of un-numbered event data.

Without a verifiable reconciliation that all events captured by cameras are in the database, LAPD lacks assurance that all events are considered for either potential citation or as a discard. Since the vendor suffers a financial penalty when data cannot support citations, there is a reasonable expectation that the vendor should provide information to support this type of reconciliation.

The City lacks assurance that all LAPD-approved violations result in citations mailed to registered owners.

For events that meet stated criteria, ATS uploads the images onto a dedicated computer at LAPD on a daily basis. There, an officer reviews each event and determines whether to cite the driver. State law requires a sworn officer to sign off on a citation before submission to the Court.

The officer's responsibility is to evaluate the video evidence of the violation, the legibility of the license plate, and whether the images are adequate to identify the driver. If so, and if in the officer's discretion a violation occurred, the officer electronically approves the citation and ATS notification is automatic. Events disapproved for citations are categorized for monthly reporting purposes.

For efficiency, ATS determines the mailing address of the alleged violator before submitting data to the LAPD for review and approval. ATS does this by accessing DMV databases and matching the registered owner of the vehicle with a driver by the same name that lives at the same address.

ATS processes officer-approved citations by generating citation numbers and printing citations in a specified format (see example at Exhibit 10). That format includes four color images:

- *A close up of the driver.*
- *The front or rear of the vehicle and license plate.*
- *The vehicle behind the limit line with the signal light in red phase.*
- *The vehicle within the intersection with the signal in red phase.*

Exhibit 10

CITY OF LOS ANGELES
NOTICE OF VIOLATION
Automated Red Light Enforcement System

Citation Number	SA12345

Citation Information

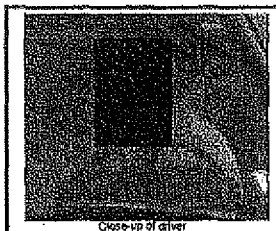
PAYMENT DUE: 01/19/2010

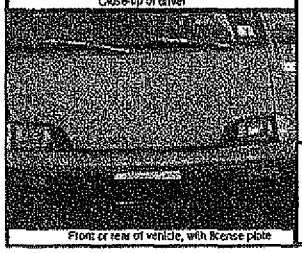
AMOUNT DUE >> $446.00

Payable to: Los Angeles Superior Court
P.O. Box 77388
Los Angeles, CA 90007

FIRST NAME LAST NAME
123 MAIN STREET
HUNTINGTON BH, CA 92648

https://www.viewyourticket.com/TicketViewer/CA_LA


Close-up of driver


Front or rear of vehicle, with license plate

VIOLATION
Red light

CODE AND SECTION
CVC 21453(a)
Fail to Stop On Red

LOCATION OF VIOLATION
Imperial WB @ Figueroa

CITY OF OCCURRENCE
Los Angeles, CA

DATE OF VIOLATION
01/14/2010

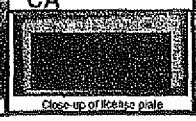
TIME OF VIOLATION
09:58:08 AM

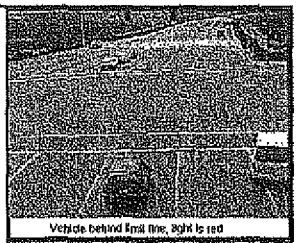
YELLOW TIME:
4.0

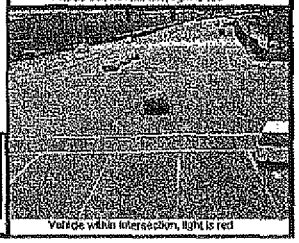
RED TIME:
0.63

VEHICLE LICENSE
4XXX123

VEHICLE STATE
CA


Close-up of license plate


Vehicle behind limit line, light is red


Vehicle within intersection, light is red

If you are filing an Affidavit of Non-Liability, complete the affidavit, separate here and mail using the enclosed envelope

Citation Number	SA12345

TO FILE AN AFFIDAVIT OF NON-LIABILITY, please complete the information requested on the reverse side of this notice, and mail the affidavit portion of this notice in the envelope that has been provided.

Respond By: 06/28/2091

Driver filing Affidavit of Non-Liability:

AUTOMATED RED LIGHT ENFORCEMENT
P O BOX 3997
BURBANK, CA 91508-3997

FIRST NAME LAST NAME
123 MAIN STREET
HUNTINGTON BH, CA 92648

LOS ANGELES POLICE DEPARTMENT
NOTICE TO APPEAR
Automated Traffic Enforcement

Date: 01/14/2010 (8) | Time: 09:58:08 | Day of Week: Friday | Citation No.: SA12345

Name(Last, Middle, First): FIRST NAME LAST NAME

Address: 123 MAIN STREET

City: HUNTINGTON BH | State: CA | ZIP Code: 92648

Driver's Lic. No.: Z3401192 | State: CA | Class: C | COMMERCIAL Yes ☐ No ☐ | Age: 28 | Birth Date: 12/25/1973

Sex: M | Hair: Brown | Eyes: Brown | Height: 6' 2" | Weight: 180 | Race: W

Veh. Lic. No.: 4XXX123 | State: CA | Commercial Vehicle ☐ | Hazardous Materials ☐

Yr. of Veh.: 2006 | Make: GMC | Body Style: PICK | Color: BLK

Registered Owner on License: FIRST NAME LAST NAME

Address: 123 MAIN STREET

City: HUNTINGTON BH | State: CA | ZIP Code: 92721

Section and Statute: 21453(a) CVC | Description: Fail to stop on red

Location of Violation: at IMPERIAL WB @ FIGUEROA | City of Occurrence: LOS ANGELES

Date Issued: | Division: | ID No.:

YOU MUST RESPOND TO THE COURT ON OR BEFORE:

WHEN: Date: 06/16/2008 | Police Instructions on the reverse.

WHAT TO DO: Appear in Court

WHERE: Superior Court of California, County of Los Angeles, Clara Shortridge Foltz Criminal Justice Center, 210 W. 1st Street, Los Angeles, CA 90012, Telephone: (213) 742-1654 | Clerk's Office Hours: Monday - Friday, 8:30 AM - 4:30 PM, except legal holidays

The citation also includes the fine or bail amount and court instructions. ATS makes a final check of content and image quality, then mails these citations to the alleged violator.

When ATS mails the citations, they take a list of the individual envelopes to the post office, where postal clerks check and hand date-stamp the list, creating a Certificate of Mailing. The Certificate of Mailing is required by law and provides evidence of compliance with the legal requirement to mail citations within 15 days of the alleged violation. Periodically, ATS electronically transfers a batch of issued citations to the Los Angeles Superior Court.

LAPD does not reconcile the total number of citations they approve with the total number of citations that ATS both mails to registered owners, and electronically submits to the Court. Currently, LAPD relies on ATS and its software to consistently print, mail and submit to the Court only those events approved by LAPD as citations.

In July 2002 the California State Auditor recommended tighter control of this issue. The report states: "A periodic reconciliation of the number of citations the local government authorized and approved with those the vendor mailed during the same period would detect any unauthorized or unapproved citations. This reconciliation would allow the local government to promptly follow up with the vendor on any differences."

When ATS electronically submits citations to the Court, ATS also emails the Court a list of the citations submitted. The Court does not immediately respond electronically with a report or even a tally of citations submitted. Rather, the Court provides ATS with a CD each month that lists all the citations paid or dismissed during the prior month. ATS loads this data into their system.

However, the data provided by the Court is a record of payments received and citations dismissed, regardless of when the citation was issued. Therefore, this information is not comparable to citations issued and approved by LAPD or mailed by ATS during that month.

Recommendations:

12. **LAPD should include a requirement in a new PRL contract for the vendor to serially number all events within their database so that LAPD review can easily detect any missing event numbers.**

13. **LAPD should continually store their own log of all citations approved for issuance and periodically compare that log with the vendor's notification to the Court of citations mailed to registered owners and entered into the Court system.**

14. **LAPD should include a requirement in the new PRL contract for the vendor to produce a comprehensive quarterly status report on**

each citation processed. For example, based on citation number, the status report could show the judicial and payment status of all citations previously and newly issued, broken out by month and year, and reconciled with the prior report.

Finding # 9: Anticipated expansion of the program will shift responsibility for infrastructure construction to the Vendor. To preserve the City's financial interests, LAPD must consider payment alternatives and asset ownership in negotiating a future contract.

LAPD indicated its plans to expand the number of PRL intersections beyond the current 32. LAPD stated that under the terms of a new RFP, the City also plans to shift the burden of all site preparation costs to the contractor. Under the previous contract, LADOT constructed the infrastructure improvements with design assistance from Nestor. This new approach, of making the vendor responsible for all necessary construction, requires consideration of increased monthly payments for each intersection, or a separate method of compensating the vendor for the construction component of the contract.

We also noted that the current draft RFP is silent on the subject of who would own the infrastructure after construction—or even after termination of the contract. There is also no mention of whether construction deadlines would apply or how to allocate costs arising from unforeseen construction delays.

Installation of Nestor's PRL cameras and related equipment at 32 City locations required engineering design work for each intersection. Each selected site was unique, with differing street geometry, slopes, sub-surface objects, surface material issues for the street and adjacent property, speed limits, and unique and active traffic control equipment and related supporting infrastructure.

LADOT worked with Nestor to modify existing engineering drawings that LADOT then used to construct necessary improvements at each intersection. PRL camera angles, the positioning of strobe lights, and the system controls required careful evaluation of the pre-existing infrastructure to ensure a successful outcome.

LADOT modified pre-existing infrastructure and provided Nestor with physical attachment points for cameras, flash units, and a control cabinet. LADOT also constructed the improvements that were necessary to provide adequate power for the automated system, as well as data interconnectivity among system components. It was Nestor's responsibility to install cameras, flash units, and the control cabinet, and to test, activate, and maintain the PRL system. The CAO reported LADOT costs of $1.6 million for their part of this process, or about $50,000 per intersection.

Given the City's budget constraints and the specific pre-installation infrastructure requirements demanded by an upgraded replacement system, it appears appropriate to assign these requirements to the vendor. However, LAPD should

seek competent counsel to price the additional construction responsibilities competitively, and to structure the payment process accordingly in order to avoid overpayment. For example, if the necessary capital costs are amortized over a stated contract term, they may effectively raise the monthly payment amount per intersection. In that case, once the infrastructure costs are fully amortized, the monthly payment should be reduced. In addition, as the City compensates the vendor for infrastructure improvements, those improvements could incrementally become the property of the City.

LAPD can avoid paying an unnecessary premium by anticipating additional up-front costs the vendor will incur, by considering the payback period for capital costs, by clearly specifying who owns what at each stage of the process, and by anticipating the problems that frequently arise in construction projects.

Recommendation:

15. **In negotiating the new contract for the PRLP, LAPD should seek competent counsel to protect the City's interests. Ensure issues regarding asset ownership, construction costs, and any related program delays due to construction, are specifically included in the contract terms.**

Finding #10: The Program is highly dependent on vendor viability; therefore, the City must ensure appropriate due diligence in contractor selection and clarity of contract terms.

The PRLP demands a strong partnership between the City and a well-performing contracted vendor. Without a viable private partner, the program cannot function.

From 2000 to 2004, the City piloted automated enforcement of traffic signal lights. When the pilot concluded PRL enforcement ended and was dark for more than a year.

After a year-long selection process, the City selected Nestor Traffic Systems, Inc. to provide PRL services, starting in 2006. The contract included provisions for two one-year extensions that could feasibly extend the contract until April 2011.

During the third year of the contract, Nestor failed financially and entered into receivership. Since the cameras and related equipment are proprietary and were owned by the failed company, the City risked program interruption a second time.

In addition, the City had initially invested $1.6 million in public (LADOT) resources to design and build out the infrastructure to accommodate Nestor's proprietary equipment. With the failure of the vendor and the program at risk of shutting down, the opportunity to benefit from this investment for the remaining two-year option period appeared lost.

In September 2009, ATS, a Nestor competitor, stepped in to purchase Nestor out of receivership, which resulted in the continued operation of the PRLP for the City. This was despite concerns that LAPD had no contractual authority to pay ATS for ongoing services, since LAPD's contract was with Nestor, and ATS dissolved Nestor during the acquisition process, essentially voiding the contract.

The agreement was eventually amended in April 2010 to formally assign the contract to ATS, which gave LAPD the authority to pay ATS for services incurred since September 2009. The contract has also been extended through April, 2011, to provide for continued service while the City seeks proposals for a new contract.

The current language of the RFP requires the vendor to provide "documentation on the organizational and financial status of the proposer," but does not specifically address the effects of a possible interruption or cessation of business by the contractor.

A common imperative in selection decisions is that the vendor must demonstrate current and long-term financial viability. In addition, the City must include provisions in its contract to reduce its financial risk.

The situation with Nestor could have been mitigated with additional contract provisions. Based on LADOT's $1.6 million investment in PRLP infrastructure, the contract could have specified that complete failure of the vendor to fulfill contract terms would have defaulted the vendor's equipment to the City. That would have put the City in a better negotiating position to seek an interim solution.

The current contract allows only for LAPD to terminate the contract. To avoid a system shutdown or an interruption in payments, the contract could have included a provision for temporary substitution of a cooperating competitor.

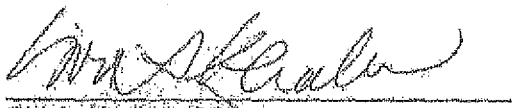
Considering the potential loss of infrastructure investment and the detrimental impact to enforcement efforts by interrupting the PRLP, the total City cost of Nestor's failure could have been substantial. LAPD's contract could have better anticipated downside risks.

Recommendation:

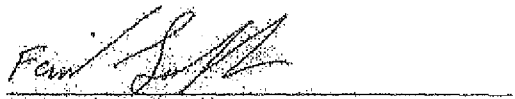
16. LAPD should work with the City Attorney and the CAO in ensuring the selection process and contract terms fully protect the City's financial interests.

Respectfully Submitted,

T. William Newman, CPA, CFE
Internal Auditor III



Siri A. Khalsa, CPA
Deputy Director of Auditing



Farid Saffar, CPA
Director of Auditing

May 26, 2010

APPENDIX A

OFFICE OF THE CONTROLLER

Review of the Photo Red Light Program

Ranking of Recommendations

Description of Finding	Ranking Code	Recommendations
Section I: The Program's Impact on Public Safety		
Finding #1: *The method used to select the 32 locations for camera enforcement eliminated some high risk intersections.*	N	1. LAPD and LADOT should increase transparency for an expanded PRLP by publicizing how the location selection process will ensure that the highest risk intersections are selected for the program. In addition, LAPD and LADOT should list intersections that meet published criteria, on their websites.
	N	2. LAPD and LADOT should obtain CalTrans approval to automate enforcement of intersections that meet selection criteria.
	N	3. LAPD and LADOT should seek funding for necessary infrastructure modifications at intersections that meet selection criteria.
Finding #2:Location decisions did not involve engineering analyses that formally documented the City's consideration of other solutions that could have a more direct effect on public safety than automated enforcement.	N	4. For any new intersection recommended in an expanded PRLP, LADOT should complete an engineering analysis template to formally document consideration of all appropriate countermeasures, and to support the recommendation that automated enforcement would have the greatest impact to improving public safety at that location.

Description of Finding	Ranking Code	Recommendations
Finding #3: ***The data presented by LAPD in their evaluation of the Photo Red Light Program, is inadequate to show a significant increase in public safety.***	U	5. LAPD should modify the method by which the PRLP is evaluated by ensuring complete and relevant data that supports the type of enforcement, i.e., right turns or straight-through violations.
	D	6. Over the long term, LAPD should pursue the full implementation of the planned integrated system to electronically record all relevant collision information, making it more easily accessible for data analysis and program evaluation.
	N	7. In the short-term, LAPD should expand their data collection from collisions at PRLP intersections. Rather than relying solely on key data fields captured by division databases, consider the information included in written collision reports and video images of the collisions that may be captured by the PRLP system, for example: ▪ Collision type (broadside, rear-end, etc.) ▪ Time into red ▪ Speed of the vehicle ▪ Movement preceding collision ▪ Feet from the intersection

Description of Finding	Ranking Code	Recommendations
	N	8. Because the PRLP seeks to modify risky behavior by ensuring compliance with traffic laws, LAPD should also assess the program results in terms of the rate of violations or citations issued through the PRLP by intersection approach. An expected outcome for a successful program would show that violations at a given location decrease over time.
Finding #4: Other factors that may be responsible for a reduction in Traffic Collisions have not been considered in reporting program results.	N	9. In coordination with LADOT, LAPD should consider, at a minimum, the effect of traffic volume in the comparative metric in reporting and measuring program results. Specifically: a. The number or ratio of traffic collisions at monitored intersections (considered through implementation of recommendations 6 and 7) compared to the number of vehicles transiting a single approach. A successful program outcome would note a decline in the adjusted ratio. b. The number or ratio of violations at monitored intersections (considered through implementation of recommendation 8) compared to the number of vehicles transiting a single approach. A successful program outcome would also note a decline in the ratio.

Section II: The Program's Impact on City Finances		
***Finding #5:** The Program has not covered its operational costs nor generated additional revenue for the City.*	U	10. LAPD and LADOT should consider departmental priorities along with the expected outcomes of the PRLP in allocating resources to the program.
***Finding #6:** All PRLP violations are cited under the same CVC and were assessed a $446 fine, regardless of the relative danger of the violation.*	N	11. Council should direct LAPD and the CLA to promote legislative action at the State to amend the CVC so that fines for red light violations reflect current technology and are proportional the to the level of danger (e.g., graduated fines, etc.).
***Finding #7:** Existing law and recent Legislative Changes Could Significantly Decrease Program Revenue.*		

Section III: Contract Oversight and Monitoring		
Finding # 8: The City relies on the vendor to ensure a complete reporting of all photo red light events, potential and LAPD approved violations, and actual citations mailed to violators, without ensuring completeness of the data.	N	12. LAPD should include a requirement in a new PRL contract for the vendor to serially number events so that LAPD review can easily detect any missing event numbers.
	N	13. LAPD should continually store their own log of all citations approved for issuance and periodically compare that log with the vendor's notification to the Court of citations mailed to registered owners and entered into the Court system.
	D	14. LAPD should include a requirement in the new PRL contract for the vendor to produce a comprehensive quarterly status report on each citation processed. For example, based on citation number, the status report could show the judicial and payment status of all citations previously and newly issued, broken out by month and year, and reconciled with the prior report.

Finding # 9: ***Anticipated expansion of the program will shift responsibility for infrastructure construction to the Vendor. To preserve the City's financial interests, LAPD must consider payment alternatives and asset ownership in negotiating a future contract.***	N	15. In negotiating the new contract for the PRLP, LAPD should seek competent counsel to protect the City's interests. Ensure issues regarding asset ownership, construction costs, and any related program delays due to construction, are specifically included in the contract terms.
Finding #10: The Program is highly dependent on vendor viability; therefore, the City must ensure appropriate due diligence in contractor selection and clarity of contract terms	N	16. LAPD should work with the City Attorney and the CAO in ensuring the selection process and contract terms fully protect the City's financial interests.

Description of Recommendation Ranking Codes

U- Urgent-The recommendation pertains to a serious or materially significant audit finding or control weakness. Due to the seriousness or significance of the matter, immediate management attention and appropriate corrective action is warranted.

N- Necessary- The recommendation pertains to a moderately significant or potentially serious audit finding or control weakness. Reasonably prompt corrective action should be taken by management to address the matter. The recommendation should be implemented within six months.

D- Desirable- The recommendation pertains to an audit finding or control weakness of relatively minor significance or concern. The timing of any corrective action is left to management's discretion.

N/A- Not Applicable

Appendix B

References Reviewed for this Report

1. Walden, T.D., Ph.D. *"Analysis On The Effectiveness Of Photographic Traffic Signal Enforcement Systems In Texas."* Crash Analysis Program of the Center for Transportation Safety, Texas Transportation Institute, Texas A&M University. Prepared for the Traffic Operations Division, Texas Department of Transportation. November 2008. [http://www.burlesontx.com/Acrobat/final_report_rlc_1008.pdf Accessed 9 Jul 2010.]

2. Bonneson, J., K. Zimmerman, and C. Quiroga. *"Review and Evaluation of Enforcement Issues and Safety Statistics Related to Red-Light-Running."* Report No. FHWA/TX-04/4196-1. Texas Department of Transportation, Austin, Texas, September 2003. [http://tti.tamu.edu/documents/4196-1.pdf Accessed 7 Jul 2010.]

3. Bonneson, J. and Zimmerman, K. *"Development of Guidelines for Identifying and Treating Locations with a Red-light Running Problem."* Report No. FHWA/TX-05/0-4196-2 College Station, Tex.: Texas Transportation Institute, The Texas A & M University. September 2004. [http://tti.tamu.edu/documents/0-4196-2.pdf Accessed 7 Jul 2010.]

4. Bonneson, J., and K. Zimmerman. *"Red-Light-Running Handbook: An Engineer's Guide to Reducing Red-Light-Related Crashes."* Report No. FHWA/TX-05/0-4196-P1. Texas Department of Transportation, Austin, Texas, September 2004. [http://tti.tamu.edu/documents/0-4196-P1.pdf Accessed 7 Jul 2010.]

5. Bonneson, J., K. Zimmerman, and M.A. Brewer. *"Engineering Countermeasures to Reduce Red-Light Running."* Federal Highway Administration Report FHWA/TX-03/4027-2, College Station, Texas, 2003. [http://tti.tamu.edu/documents/4027-2.pdf Accessed 7 Jul 2010.]

6. Bonneson, J., K. Zimmerman, and M. Brewer. *"Effect of Yellow Interval Timing On Red-Light Violation Frequency at Urban Intersections."* Transportation Research Record. Washington, D.C.: Texas Transportation Institute, Texas A & M University, 2004. [http://www.motorists.org/photoenforce/TRB2004-001228.pdf Accessed 7 Jul 2010.]

7. Bonneson, J.A., Zimmerman, K.H., and Pratt, M.P. *"Red-light-running Handbook Workshop Series: Year 2 Summary Report."* Austin Tex.: Texas Department of Transportation, 2006. [http://tti.tamu.edu/documents/5-4196-01-2.pdf Accessed 9 Jul 2010.]

8. *"Red Light Running Camera (Photo Enforcement) Engineering Safety Analysis Guidelines."* Highway Operations Section, Traffic Engineering Division, Virginia Department of Transportation. February 19, 2008 Revised August 26, 2009. [http://www.virginiadot.org/hg_295/i-295_flyover/RLR-ver6.pdf Accessed 7 Jul 2010.]

9. California State Auditor. *"Red Light Camera Programs: Although They Have Contributed to a Reduction in Accidents, Operational Weaknesses Exist at the Local Level."* Report 2001-125, Bureau of State Audits, Sacramento, California, July 2002. [http://www.bsa.ca.gov/pdfs/reports/2001-125.pdf Accessed 7 Jul 2010.]

10. Thomas, G.B. and Smith, D. J., *"The Effectiveness of Iowa's Automated Red Light Running Enforcement Programs Improvements (Final Report),"* Center for Transportation Research and Education 05-226, Iowa State University, 2007. [http://www.intrans.iastate.edu/reports/rlr-phase2.pdf Accessed 9 Jul 2010.]

11. McGee, H.W. *"Making Intersections Safer: A Toolbox of Engineering Countermeasures to Reduce Red-Light Running."* Institute of Transportation Engineers, Washington, D.C., 2003. [http://safety.fhwa.dot.gov/intersection/redlight/cameras/rlr_report/rlrbook.pdf Accessed 9 Jul 2010.]

12. Federal Highway Administration. *"Stop Red Light Running: Facts."* Federal Highway Administration U.S. Department of Transportation, 2006.

13. Retting, R.A., Williams, A.W., Farmer, C.M. &Feldman, A.F. (1995). *"Evaluation of Red Light Camera Enforcement in Oxnard, California. Accident Analysis and Prevention,"* 31 (1999) 169-174.

14. Retting, R.A., and S. Kyrychenko. *"Crash Reductions Associated with Red Light Enforcement in Oxnard, California."* Insurance Institute for Highway Safety, April 2001.

15. Retting, R.A., and M.A. Greene. *"Influence of Traffic Signal Timing on Red-Light Running and Potential Vehicle Conflicts at Urban Intersections."* Transportation Research Record 1595. Transportation Research Board, Washington D.C., 1997, pp. 1-7.

16. *"Stop on Red = Safe on Green: A Guide to Red Light Camera Programs."* National Campaign to Stop Red-Light Running. Washington, D.C. www.stopredlightrunning.com, 2002.

17. PB Farradyne. *"City of San Diego Photo Enforcement System Review."* Final Report. City of San Diego Police Department, San Diego, California, January 2002.

18. *"Red Light Camera Systems: Operational Guidelines,"* Federal Highway Administration and National Highway Traffic Safety Administration, Washington, DC, January 2005. [http://safety.fhwa.dot.gov/intersection/redlight/cameras/fhwasa05002/fhwasa05002.pdf Accessed 8 Jul 2010.]

19. *"Field Guide for Inspecting Signalized Intersections to Reduce Red-Light Running,"* Federal Highway Administration and Institute of Transportation Engineers, Washington, DC, 2003. [http://safety.fhwa.dot.gov/intersection/redlight/tech/fguide_isirlr/ Accessed 3 Sep 2010.]

20. *Manual on Uniform Traffic Control Devices for Streets and Highways*, 2003 Edition, Federal Highway Administration, Washington, DC, 2003 / 2007.

21. Garber, N.J., et. al., *"The Impact of Red Light Cameras (Photo-Red Enforcement) on Crashes in Virginia,"* Virginia Transportation Research Council, VTRC 07-R2, Charlottesville, VA, June 2007. [http://www.virginiadot.org/vtrc/main/online_reports/pdf/07-r2.pdf Accessed 8 Jul 2010.]

22. Persaud, K., and Lyon, C., *"Peer review of the June 2007 VTRC report: 'The Impact of Red Light Cameras (Photo-Red Enforcement) on Crashes in Virginia',"* November 2007. [http://www.thenewspaper.com/rlc/docs/2010/08-vdotresponse.pdf Accessed 8 Jul 2010.]

23. Persaud, K., Rettig, R., Lyon, C., McCartt, A. *"Review of the June 2007 VTRC report: 'The Impact of Red Light Cameras (Photo-Red Enforcement) on Crashes in Virginia',"* May 2008. [http://www.thenewspaper.com/rlc/docs/2010/08-vdotresponse.pdf Accessed 8 Jul 2010.]

24. Garber, N.J., et. al., *"An Evaluation of Red Light Camera (Photo-Red) Enforcement Programs in Virginia: A Report in Response to a Request By Virginia's Secretary of Transportation,"* Virginia Transportation Research Council, VTRC 05-R21, Charlottesville, VA, January 2005. [http://www.virginiadot.org/vtrc/main/online_reports/pdf/05-r21.pdf Accessed 8 Jul 2010.]

25. Gatso meter BV, Company overview. http://www.gatsometer.com.

26. National Campaign to Stop Red Light Running, http://www.stopredlightrunning.com

27. McGee, H.W., and K.A. Eccles. *"NCHRP Synthesis of Highway Practice 310: Impact of Red Light Camera Enforcement on Crash Experience."* TRB, National Research Council, Washington D.C., 2003.

[http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_310.pdf Accessed 8 Jul 2010.]

28. Council, F.M., B. Persaud, K. Eccles, C. Lyon, and M.S. Griffith. *"Safety Evaluation of Red-Light Cameras."* Report FHWA-HRT-05-048. FHWA, U.S. Department of Transportation, April 2005. [http://www.fhwa.dot.gov/publications/research/safety/05048/05048.pdf Accessed 9 Jul 2010.] E.3.10

29. Najm, W.G., J.D. Smith, D.L. Smith, *"Analysis of Crossing Path Crashes,"* Report DOT HS 809 423. FHWA, U.S. Department of Transportation, July 2001. [http://www.nhtsa.gov/DOT/NHTSA/NRD/Multimedia/PDFs/Crash%20Avoidance/2003/DOTHS809423.pdf Accessed 8 Jul 2010.]

30. California State Controller. *"Los Angeles County Audit Report: Court Revenues, July 1, 2003, through June 30, 2007."* Sacramento, California, July 29, 2009.

31. Schieber, R.A., Vegega, M.E. (Editors), *"National Strategies for Advancing Child Pedestrian Safety."* Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2001.

32. *"Pedestrian Collisions in Los Angeles, 1994 through 2000."* City of Los Angeles, Department of Transportation, 2006.

33. Burkey, M., and Obeng, K. *A detailed investigation of crash risk reduction resulting from red light cameras in small urban areas.* Urban Transit Institute, North Carolina Agriculture and Technical State University, Greensboro, 2004.

34. Insurance Institute for Highway Safety. *"Response to Comments by Mark Burkey Concerning Institute Criticism of Burkey and Obeng Study of Red Light Cameras."* Arlington, VA.: 2005.

35. Andraessen, D., *"A Long Term Study of Red Light Cameras and Accidents,"* Australian Road Research Board ARR 261, 1995.

36. Langland-Orban, B., Pracht, E.E., Large, John T., *"Red Light Running Cameras: Would Crashes, Injuries and Automobile Insurance Rates Increase If They Are Used in Florida?"* Florida Public Health Review, 2008; 5:1-7 7. http://health.usf.edu/publichealth/fphr/volume+5.htm

37. Letters to the Editor, *"Red Light Running Cameras – Reader Reactions and Authors' Reply,"* Florida Public Health Review, 2008; 5:47-52. http://health.usf.edu/publichealth/fphr/volume+5.htm

38. Retting, R.A., S.A. Ferguson, and C.M. Farmer. *"Reducing Red Light Running Through Longer Yellow Signal Timing and Red Light Camera Enforcement:*

Results of a Field Investigation." Insurance Institute for Highway Safety, 2007. [http://www.stopredlightrunning.com/pdfs/ReduceRedLt_IIHS_.pdf Accessed 8 Jul 2010.]

39. Ogura, G., MacWillie, M., and Gregg, M. *"Automated Photo Enforcement Countermeasures: Field Trials and Comparisons."* Institute of Transportation Engineers, ITE Journal, p. 34, May 2010. [http://www.docstoc.com/docs/41230070/Automated-Photo-Enforcement-Countermeasures-Field-Trials-and-Comparisons Accessed 21 Jul 2010.]

40. Oesch, S.L., *"Statement before the Pennsylvania House Committee on Transportation: Research on Red Light Cameras."* Insurance Institute for Highway Safety, Arlington, VA, 2007.

41. Public Opinion Strategies, *"Poll Shows Strong National Support For 'Red-Light Cameras',"* Alexandria, VA, May 2005.

42. Insurance Institute for Highway Safety, *"Mind those Traffic Lights,"* Status Report, vol. 42, no. 1, Jan. 27, 2007. Arlington, VA, 2007.

43. *"The Red Light Running Crisis: Is It Intentional?"* Office of the Majority Leader, U.S. House of Representatives, May 2001.

44. Federal Highway Administration, Issue Briefs. *"Using Red-Light Cameras to Reduce Red-Light Running (RLR),"* Institute of Transportation Engineers, Washington, D.C., April 2004.

45. Federal Highway Administration, Issue Briefs. *"Engineering Countermeasures to Reduce Red-Light Running,"* FHWA-SA-10-005, Washington, D.C., November 2009.

46. Ventura County Grand Jury 2008-2009. *"Cars on Camera, Red Light Enforcement,"* Ventura, CA, June 2009.

47. Garber, N.J., Bayat-Mokhtari, Faramarz. *"Optimizing Traffic Counting Procedures,"* Virginia Highway and Transportation Research Council, VHTRC 86-R40, Charlottesville, VA, May 1986. [http://www.virginiadot.org/vtrc/main/online_reports/pdf/86-r40.pdf Accessed 22 Jul 2010.]

48. Federal Highway Administration. *"Red-Light Running."* National Highway Traffic Safety Administration, U.S. Department of Transportation, Washington D.C., [http://safety.fhwa.dot.gov/intersection/redlight/ Accessed 8 Jul 2010.]

49. Federal Highway Administration. *"Desktop Reference for Crash Reduction Factors."* National Highway Traffic Safety Administration, U.S. Department of Transportation, Washington D.C., Publication No. FHWA-SA-08-011,

September 2008.
[http://safety.fhwa.dot.gov/tools/crf/resources/desk_ref_sept2008/desk_ref_sept2008.pdf] Accessed 9 Jul 2010.]

50. Aeron-Thomas AS, Hess S. *"Red-light cameras for the prevention of road traffic crashes."* The Cochrane Database of Systematic Reviews 2005, Issue 2. Art. No.: CD003862.pub2. DOI: 10.1002/14651858.CD003862.pub2. [http://www.stopredlightrunning.com/pdfs/Cochrane%20Study%20CD0038621.pdf Accessed 8 Jul 2010.]

51. Bochner, B.S., Walden, T.D., Ph.D. *"Effectiveness of Red-Light Cameras."* Institute of Transportation Engineers, ITE Journal, p. 18, May 2010.

52. Shin, H.S., Ph.D., et. al. *"The New York City Pedestrian Study and Action Plan."* New York City Department of Transportation; August 2010. [http://www.nyc.gov/html/dot/html/about/pedsafetyreport.shtml Accessed 3 Sep 2010.]

53. Antonucci, N.D., Hardy, K.K., Slack, K.L., Pfeffer, R., and Neuman, T.R. *"NCHRP Report 500: Guidance for Implementation of the AASHTO Strategic Highway Safety Plan, Volume 12: A Guide for Reducing Collisions at Signalized Intersections."* TRB, National Research Council, Washington D.C., 2004. [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v12.pdf Accessed 9 Sep 2010.]

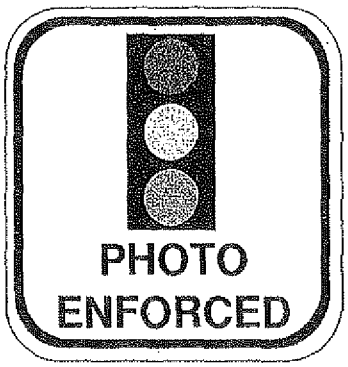
54. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_350.pdf

This page intentionally left blank.

Appendix C

VDOT
Virginia Department of Transportation

Red Light Running Camera (Photo Enforcement) Engineering Safety Analysis Template



Highway Operations Section
Traffic Engineering Division
Virginia Department of Transportation
1401 East Broad Street
Richmond, Virginia 23219

February 19, 2008

February 19, 2008

VDOT
Traffic Signal Photo Enforcement – Engineering Analysis Template

Local Jurisdiction: _____ VDOT District: _____
(County/City/Town)

Intersection: _____
Street Name (Route #) at Street Name (Route #)

This Study performed under the direction of _____.
(licensed professional engineer)

A. INTERSECTION & SIGNAL DATA

1. Signal Visibility

a. Minimum Sight Distance to Signal

Approach	Grade	Speed Limit (mph)	Measure (ft)	Required (ft)*

*See attached table of minimum sight distance requirements from the MUTCD.

b. Are "SIGNAL AHEAD" signs present? ☐ Yes ☐ No
Are "SIGNAL AHEAD" signs needed? ☐ Yes ☐ No
Are other warning signs present in the vicinity of the intersection? ☐ Yes ☐ No
Explain: _____
_____

c. Information on Signal Heads

Approach	Lens Size	Lens Type (LED or Bulb)	Back Plates (Yes or No)

2. Pavement and Markings Data

a. Stop bars in "good" condition? ☐ Yes ☐ No
Explain: _____
_____

b. Lane lines "clearly" visible? ☐ Yes ☐ No
Explain: _____
_____

c. Crosswalks "clearly" marked? ☐ Yes ☐ No
Explain: _____
_____

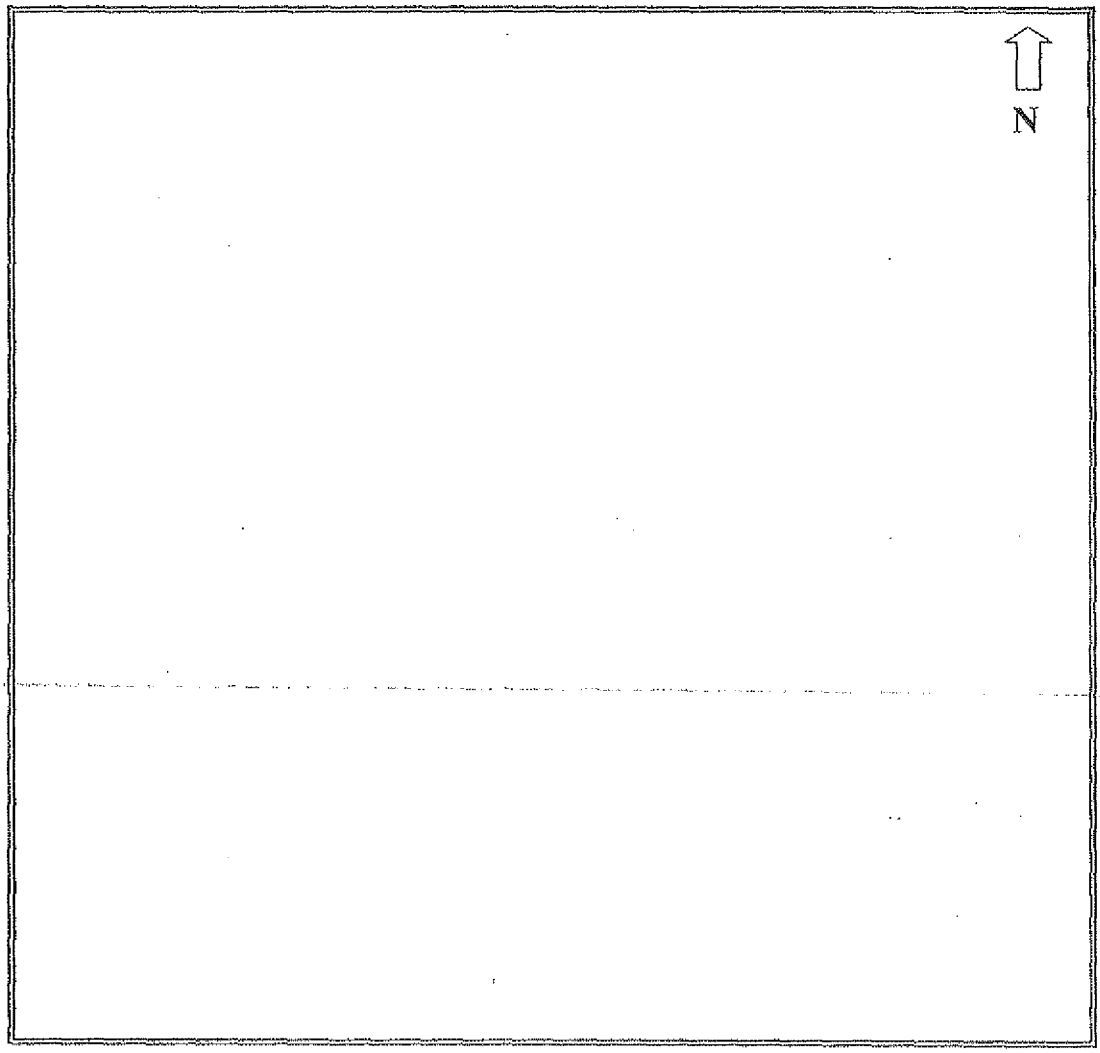
d. Pavement conditions (ruts, potholes, cracking, etc.)?

- ☐ Good Explain: _____
- ☐ Fair Explain: _____
- ☐ Poor Explain: _____

e. Pavement surface treatments exist? (rumble strips, texturing, pavers, etc.)

- ☐ Yes Explain: _____
- ☐ No

3. Provide diagram of intersection including: pavement markings, width of lanes and medians, location of signal heads and signs, locations of loops/detectors, and grades.



B. SIGNAL TIMING & TRAFFIC DATA

1. Clearance Intervals

Approach	Posted Speed Limit	Grade	Width of Intersection	Yellow Interval		All Red Interval	
				Existing	Calculated*	Existing	Calculated*

*Reference TE Memo 306 provided in Appendix E for calculation of Clearance Intervals

2. Include existing controller settings for each phase and each time-of-day. Information should include applicable settings such as minimum green, max 1 & 2, passage, minimum gap/ext, protected-permissive, lead-lag, yellow and all red, walk and ped clearance time, recall settings, offsets, cycle length, etc. Include analysis of peak hour conditions and a determination of whether signal timings are contributing to red-light running problem.

a. Does signal timing or phasing factor in as a possible contributor to RLR at this intersection?

☐ Yes Explain: _____

_____

☐ No

b. List comments or recommendations on potential signal timing or phasing changes:

_____

_____

_____

3. Vehicle Detection Data

Approach	Detection Type (loop, video, etc.)	Detector Location (measured from stop bar)

4. Traffic Volume Data

Approach	Daily Volumes		Peak Hour Volumes	
	Total	Heavy Vehicles	Total	Heavy Vehicles

C. CRASH & ENFORCEMENT DATA

1. Three-Year Crash Data

Collision Type	3-year Total	Number of Injury Crashes	Number of Fatal Crashes	Crashes Associated With Red-Light-Running
Angle				
Rear End				
Head On				
Sidewsipe				
Pedestrian				
Bicyclist				
TOTAL				

2. Crash Rate
   a. Number of crashes per million entering vehicles: _____
   b. Locality rate for comparison (if available): _____

3. Violation Rate
   a. Number of red light running citations per year issued by law enforcement at the evaluated intersection, if available.
   Number: _____ Year: _____

   b. Observed Violations
   Date: _____
   Time Period: _____

Approach	Traffic Volume	Number of Violations

4. Enforcement and Operational Issues
   a. Describe the difficulty experienced by law enforcement officers in patrol cars or on foot in apprehending violators.
   _____
   _____

   b. Describe the ability of law enforcement officers to apprehend violators safely within a reasonable distance from the violation.
   _____
   _____

   c. Are pedestrians at risk due to violations? ☐ Yes ☐ No
   Explain: _____
   _____
   Number of pedestrians per hour? _____
   Pedestrian crosswalk provided? ☐ Yes ☐ No

   d. Have there been any changes to the operations of the intersection (signal timing, restriping, or increased enforcement) within the past three years? ☐ Yes ☐ No
   Explain: _____
   _____

Minimum Sight Distance

85th Percentile Speed (mph)	Minimum Sight Distance (ft)
20	175
25	215
30	270
35	325
40	390
45	460
50	540
55	625
60	715

Table 4D-1 *Manual on Uniform Traffic Control Devices*, (Revision 1, Nov 2004) Transportation Research Board (TRB), Washington, DC, 2003

From: Lulu Dionglay <LD@sageadvisorsinc.com>
To: "V8834@lapd.lacity.org" <V8834@lapd.lacity.org>
Date: 4/18/2011 10:52 AM
Subject: Support Document for Agenda Item 8B re: Jay Beeber's Report
Attachments: 41911 Agenda Item 8B.pdf

Dear Tammy,

We would appreciate if you could kindly distribute to the Commissioners the attached supporting documents for tomorrow's board meeting in connection to agenda item # 8B re: Analysis of Jay Beeber's Report.

Thank you very much for your help.

Best regards,

Lulu Dionglay
Sage Advisors, Inc.
221 S Figueroa Street, Suite 240
Los Angeles, CA 90012
Tel: (213) 346-0400
Fax: (213) 346-0410

Capt McDonald
EOD

Lt Katona
EOD

B. DEPARTMENT'S REPORT, dated April 19, 2011, relative to Analysis of Jay Beeber's report entitled "Safer Streets in Los Angeles: Why engineering countermeasures are more effective than photo enforcement in reducing red light related crashes" (City Council Motion 11-0125) [BPC #11-0158]

Recommendation(s) for Board action:

1. APPROVE the Department's report and TRANSMIT to the City Council.

Capt Maltez
SOE Area

C. DEPARTMENT'S REPORT, dated April 6, 2011, relative to Recommendation for the Medal of Valor, as set forth. [BPC #11-0149]

Recommendation(s) for Board action:

1. APPROVE the Department's report.

Peter DiCarlo
ASB

Capt Wakefield
IAID

D. DEPARTMENT'S REPORT, dated April 6, 2011, regarding Donation Approval Process Inspection – Third Quarter (IAID No. 11-016), as set forth. [BPC #11-0152]

Recommendation(s) for Board action:

1. APPROVE the Department's report.

D'Anna Markley
R&I Div

E. DEPARTMENT'S REPORT, dated April 5, 2011, relative to Proposed Addition to Council-Approved Records Retention Schedule – PDX 91, as set forth. [BPC #11-0156]

Recommendation(s) for Board action:

1. APPROVE the Department's report and TRANSMIT to the City Clerk, Records Management Officer.

D'Anna Markley
R&I Div

F. DEPARTMENT'S REPORT, dated April 5, 2011, relative to Proposed Addition to Council-Approved Records Retention Schedule – PDX 95, as set forth. [BPC #11-0155]

Recommendation(s) for Board action:

1. APPROVE the Department's report and TRANSMIT to the City Clerk, Records Management Officer.

D'Anna Markley
R&I Div

G. DEPARTMENT'S REPORT, dated April 5, 2011, relative to Proposed Addition to Council-Approved Records Retention Schedule – PDX 40, as set forth. [BPC #11-0154]

Recommendation(s) for Board action:

1. APPROVE the Department's report and TRANSMIT to the City Clerk, Records Management Officer.

dailynews.com

Mark V. Rosenker: 'Report' findings are wrong; red-light cameras save lives

By Mark V. Rosenker

Posted: 04/13/2011 04:37:55 PM PDT

Updated: 04/13/2011 04:39:35 PM PDT

DURING my tenure as a member and chairman of the National Transportation Safety Board, I had the opportunity to closely monitor trends in traffic safety. In 2003, the year I joined the board, nearly 43,000 people died on our nation's roads. I believed that we as a nation needed to do significantly more both technologically and politically to reduce loss of life. Our efforts are now beginning to bear fruit.

Recently the National Highway Traffic Safety Administration reported that traffic deaths were at a 61-year low last year.

While still an estimated 32,788 people tragically died in traffic accidents in 2010, that number represented a more than 25 percent decline since 2003 and marks the fewest traffic fatalities since 1949.

A lot of factors impacted the decline in traffic deaths. Among those are: safer vehicles; increased seat-belt use, achieved through stricter laws; more children buckled in to child restraint seats, achieved through laws designed to protect children in moving vehicles; a d ecrease in drunk driving, thanks to stricter enforcement by police and the implementation of more sobriety checkpoints; and the use of red-light and speed safety cameras to discourage drivers from running red lights and speeding.

Unfortunately, despite all of the progress that has been in reducing traffic fatalities, a vocal minority of citizens continues to advocate policies that if implemented, would reverse these trends. You know who they are, the

same groups that have opposed most of the traffic safety improvements I've just mentioned. They don't like mandatory use of seat belts and child safety seats. And they view sobriety checkpoints and traffic safety cameras as intrusions on their personal freedoms, as though it should be their God-given right to drive impaired, or speed and run red lights with impunity.

Recently, this debate has heated up in Los Angeles, where misinformation - even disinformation - about the program has been spread by groups that have made their mark by opposing government safety regulations of any kind.

These groups have used distorted facts and inaccuracies to launch a campaign to end the city's red-light safety camera program, a program that in its six-year existence has not seen a fatality at any of the 32 monitored intersections.

Nixing the cameras on the heels of the recent

dailynews.com

research study from the Insurance Institute of Highway Safety that documented how well the cameras are saving lives would be foolhardy. The IIHS researchers concluded that red-light safety cameras saved 159 lives in 2004-08 in 14 of the biggest U.S. cities. Had cameras been operating during that period in all large cities, according to the IIHS, a total of 815 deaths would have been prevented.

In 2009 red-light running killed 676 people, including more than 100 in California, and injured an estimated 113,000 nationwide. Tragically, nearly two-thirds of the deaths were victims other than the red-light running drivers - occupants of other vehicles, passengers in the red-light runners' vehicles, bicyclists or pedestrians.

In a city like Los Angeles where the climate is an almost-daily invitation for people to get out and walk, jog or cycle, taking extra steps to protect the nonmotoring public from death or injuries makes sense.

I strongly urge the city of Los Angeles to closely review the credible and scholarly research studies and reject the so-called "reports" generated by self-proclaimed "experts" whose true mission is to curb all traffic safety initiatives implemented by government.

There no question there's room for Los Angeles to fine-tune its traffic safety camera program. But it would clearly be a bad idea to eliminate it altogether.

Mark V. Rosenker of Virginia was appointed by President Bush to two terms at the National Traffic Safety Board beginning March 2003. He currently is a senior advisor to the National Coalition for Safer Roads.

Commissioner and Council Members, 4/15/2011

My name is Professor Simon Washington. I was recently forwarded a report titled "SAFER STREETS IN LOS ANGELES: Why Engineering Countermeasures Are More Effective than Photo Enforcement in Reducing Red-Light Related Crashes" by Jay Beeber from Safer Streets LA—an interest group that according to their web site is against red light cameras. Prior to providing a critical review this report, I first outline my relevant credentials and abilities.

As a traffic safety engineer, researcher, and professor, I have dedicated my professional life to measuring, understanding, and improving traffic safety on our nation's roadways. Prior to joining the faculty at the Queensland University Centre for Accident Research and Road Safety in Australia—one of the premier road safety research centers in the world, I was Director of the Safe Transportation Research and Education Center (SAFETREC) at the University of California, Berkeley. I have also served on the academic faculties of Arizona State University, the University of Arizona, and the Georgia Institute of Technology. At each of these research intensive institutions I have taught graduate level courses in transportation safety. During this same period I directed over $8 Million in federal, state, and locally supported research on road safety and transportation planning research—including three separate studies evaluating red light and speed cameras in the US. Finally, I have served and continue to serve on matters of road safety on numerous research boards and advisory committees including those at the National Academy of Sciences Transportation Research Board (TRB) and the National Highway Traffic Safety Administration (NHTSA).

Perhaps most relevant to the review of the subject report, I serve on the editorial boards of five peer reviewed journals, three of which focus exclusively on road safety. One of these journals—Accident Analysis & Prevention, is the premier academic journal on road safety in the world. A second journal for which I serve as Associate Editor in charge of transportation safety—the American Society of Civil Engineering Journal of Transportation Engineering—is the oldest running journal in the US. My primary role as editor of these journals is to coordinate the technical reviews of international papers on road safety by authors throughout the world, and to ultimately accept or reject these papers as credible contributions to the road safety profession.

I am significantly concerned by the focused attention being given to a report authored by a member of the public who I understand does not have any expertise in this area and sponsored by an agency that is categorically against red light cameras. Safer Streets LA clearly is not an organization interested in a balanced review of red light cameras. A quick search of the peer-review literature reveals not a single peer review report or paper authored by Jay Beeber—thus the report's author has not established credibility in the road safety profession or been vetted by the professional community.

The introduction of the report uses rather tricky wording to imply that credible agencies have supported the research. If read carefully, the author is saying that the reports reviewed in the course of preparing the paper were conducted and sponsored by credible agencies; however, the report itself does not appear to be sponsored or endorsed by any credible agency such as the ITE or the Texas DOT.

Most of the compelling and conclusive peer reviewed research documenting the benefits of red-light cameras and their effectiveness is conspicuously missing from this report. Ample research has been conducted in the US and abroad documenting the benefits of red light running on reducing crashes; however, the vast majority of this research has been omitted from the report. Two examples of carefully scrutinized national reports are NHTSA's report "Countermeasures that Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 5th Edition, 2010" and the Insurance Institute of Highway Safety's national review of photo enforcement published in ITE, "Two

Decades of Photo Enforcement in the United States: A Brief Summary of Experience and Lessons Learned" (ITE, Vol 80, Issue 11, 20-24). Both of these reports convey an unbiased review of the limitations and benefits of red light cameras deployed in the US, and conclude that the benefits in terms of lives saved and injuries reduced are generally consistent, significant, and reliable.

By focusing solely on engineering countermeasures, the Beeber report ignores the human behavior aspect that cameras are intended to prevent—intentional red light running. Red light cameras are extremely effective at preventing illegal and dangerous behavior, behavior that can lead to serious injuries and death, while engineering countermeasures are not effective at deterring poorly intentioned driver behavior. Another classic example of this is impaired driving, which is difficult or impossible to deter with engineering countermeasures alone; behavioral interventions are needed to effectively combat impaired driving also.

The report suggests that engineering improvements alone such as adjustments to yellow times and all red clearance intervals can sufficiently improve the safety of intersections. This is simply not supported by the evidence. Many competent traffic engineers throughout the US have adjusted signal timing at intersections trying to reduce red-light-running related crashes and violations with positive but limited success. When automated cameras have been installed at these locations with high red light violations, on average the number of associated crashes have been reduced significantly and well beyond those achieved through signal timing enhancements alone.

In conclusion, the non-peer reviewed report by Mr. Beeber attempts to selectively present information and data to discredit the LA photo red light enforcement program and red light camera programs in general. Mr. Beeber has not established credibility in the road safety profession, and the agency he represents clearly takes a biased position on red light cameras. This report would not be used by professional engineers or state departments of transportation to inform critical decisions about the installation or continuation of red light camera programs. Other, widely accepted and peer reviewed reports should be used to inform such decisions. The professional literature and experience in the US and internationally suggests that Red Light Safety Camera programs—properly deployed—increase traffic safety in a meaningful way and ultimately save lives.

Please do not hesitate to contact me if you have further questions,

Sincerely,

Professor Simon Washington (simon.washington@qut.edu.au)
Queensland Transport and Main Roads Endowed Chair of Transport
School of Urban Development, Faculty of Built Environment and Engineering
Centre for Accident Research and Road Safety (CARRS-Q), Faculty of Health
Queensland University of Technology, 2 George St GPO Box 2434
Brisbane Qld 4001 Australia
Tel: +61 7 3138 9990
www.bee.qut.edu.au
www.carrsq.qut.edu.au

National Coalition
for Safer Roads

Contact for more information & interview requests:
Stacey Radnor at info@saferoadssavelives.org or 202-870-6668

NATIONAL ROAD SAFETY COALITION CALLS FOR KEEPING RED LIGHT SAFETY CAMERAS IN THE CITY OF LOS ANGELES

Monday, April 4, 2011 – The National Coalition for Safer Roads (NCSR) today called on the City of Los Angeles to continue its highly successful red light safety camera program. NCSR President and Executive Director David Kelly said the program has proven it makes communities safer.

"There is a mounting body of evidence showing red light safety cameras change dangerous driver behavior — saving lives and reducing injuries," said Kelly, who is also the former acting administrator of NHTSA. "L.A. residents and officials just need to look at the local and national results to see the positive effects of these safety programs."

In a February letter to the city's Board of Police Commissioners, Los Angeles Chief of Police Charlie Beck highlighted the "measurable safety improvements" that resulted from the city's Photo Red Light (PRL) Program.

"From January 2004 to December 2009, red-light collisions at PRL intersections have decreased by 63 percent," wrote Beck. "Additionally, there has been an overall decrease of 10 percent in all types of collisions, and no red light related fatalities since program activation (compared to five fatalities in the three years prior to PRL enforcement from January 2004 to December 2006)."

These findings mirror those of a recent national study from the Insurance Institute for Highway Safety. Red light safety cameras helped save more than 150 lives in the 14 biggest U.S. cities from 2004 to 2008, according to IIHS. Had the cameras been operating in all 99 U.S. cities with populations over 200,000, more than 800 lives could have been saved.

David Kelly is NCSR's principal spokesman and representative before state and national policymaking bodies. He is the former acting administrator of NHTSA. President Bush nominated him to the position after Kelly served as the agency's Chief of Staff. He also served as director of the U.S. National Safety Council's Airbag & Seat Belt Campaign.

To find more information about improving road safety, visit www.saferoadssavelives.org and follow @SaferRoadsUSA on Twitter and on Facebook at http://www.facebook.com/SaferRoadsUSA.

SPECIAL ISSUE: RED LIGHT RUNNING

STATUS REPORT

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

Vol. 46, No. 1, Feb. 1, 2011

The red light runners think they've been wronged. They're convinced that the cameras documenting their violations are nothing more than a scheme to pick the pockets of motorists. The truth is simpler:

RED LIGHT RUNNING KILLS

and red light cameras save lives. In fact, they saved 159 lives in 2004-08 in the 14 biggest US cities with cameras, a new Institute analysis shows. If cameras had been operating during that period in all cities with populations of more than 200,000, a total of 815 fewer people would have died.

Camera opponents don't acknowledge the connection between those whose red light running sets off a benign flash and those who cause a deadly collision. Instead, they argue about "big brother" and equate fines for violations with taxes on drivers.

Not everyone who runs a red light is part of this group. No doubt, most violators calmly take their lumps, paying their tickets and vowing to be more careful. But

a vocal minority get angry, and their outrage gets broadcast on the Internet, magnified by the media, and channeled into campaigns to ban red light cameras on the local or state level. When officials try to assure the public that cameras are about safety, not revenue, they are all but drowned out by the protests of these aggrieved drivers.

"Somehow, the people who get tickets because they have broken the law have been cast as the victims," says Institute president Adrian Lund. "We rarely hear about the real victims — the people who are killed or injured by these lawbreakers."

People like Deborah Parsons-Mason, a California mother of 1 who was fatally hit by a red light runner while crossing the street near her home. Or Marcus May-Cook, who was sleeping in his car seat when a red light runner ended his life after only 3 years. Or Jacy Good who was permanently disabled and lost both her parents in a red light running crash just hours after her college graduation. The Institute is highlighting their stories and others on these pages to bring the discussion back to the real victims.

Red light running killed 676 people and injured an estimated 113,000 in 2009. Nearly two-thirds of the deaths were people other than the red light running drivers — occupants of other vehicles, passengers in the red light runners' vehicles, bicyclists, or pedestrians.

Since the 1990s, communities have used red light cameras as a low cost way to police intersections. The number of cities embracing the technology has swelled from just 25 in 2000 to about 500 today.

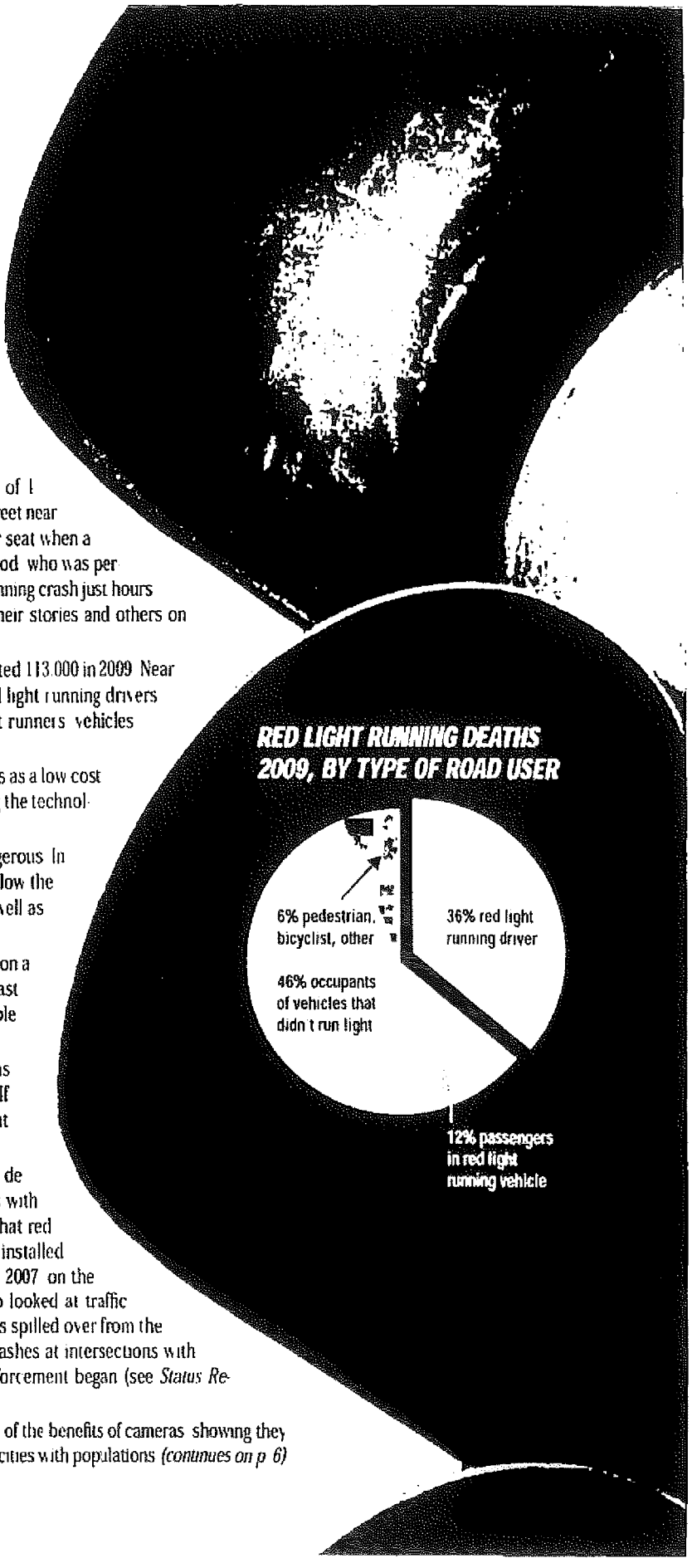
Without cameras, enforcement is difficult and often dangerous. In order to stop a red light runner, officers usually have to follow the vehicle through the red light, endangering themselves as well as other motorists and pedestrians.

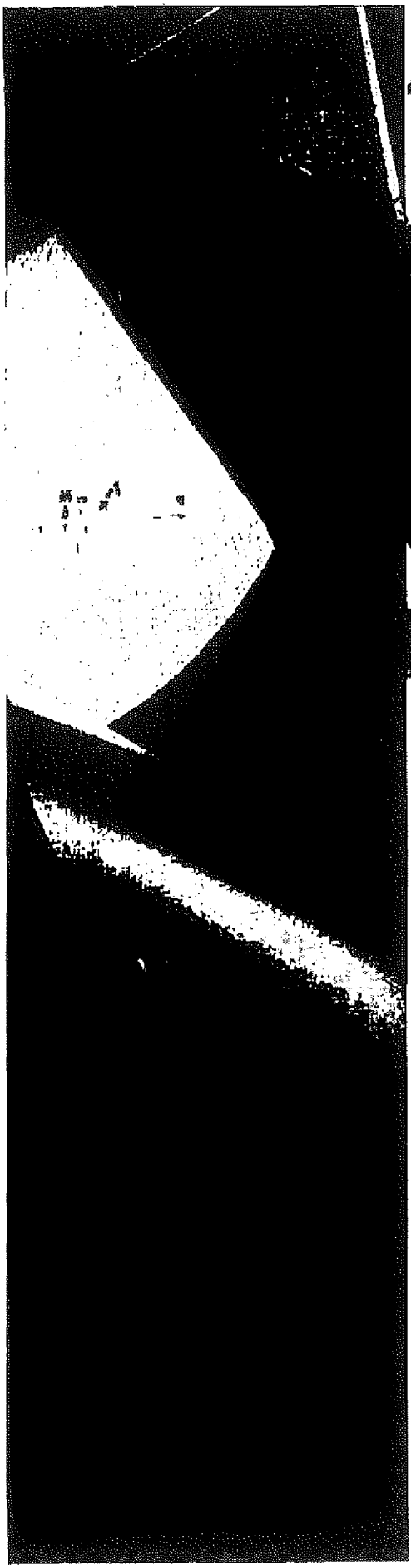
Moreover, the manpower required to police intersections on a regular basis would make it prohibitively expensive. In contrast, camera programs can pay for themselves by requiring people who break the law to shoulder the cost of enforcing it.

"The cities that have the courage to use red light cameras despite the political backlash are saving lives," Lund says. "If they are able to recover some of their traffic enforcement costs at the same time, what's wrong with that?"

Previous research has established that red light cameras deter would-be violators and reduce crashes at intersections with signals. Institute studies of camera programs have found that red light violations fell at intersections where cameras were installed (see *Status Report*, March 7, 1998, Dec. 5, 1998, and Jan. 27, 2007, on the web at iihs.org). In two of those studies, researchers also looked at traffic lights without cameras and found the decrease in violations spilled over from the camera-equipped intersections. In Oxnard, Calif., injury crashes at intersections with traffic signals fell 29 percent citywide after automated enforcement began (see *Status Report*, April 28, 2001; on the web at iihs.org).

The Institute's latest study provides powerful confirmation of the benefits of cameras, showing they reduce deaths throughout entire communities. Looking at US cities with populations *(continues on p. 6)*





Clockwise from left, J[illegible]ood

Jacy Good on day of crash

JEAN GOOD AND JAY GOOD, 58

MAIDENCREEK TOWNSHIP, PENNSYLVANIA

Hours after Jacy Good's graduation from Muhlenberg College in Allentown, Pa., she and her parents packed the family's 1989 Oldsmobile station wagon, strapped a sofa to the roof, and headed home to Lititz, a tiny Lancaster County town.

At 21, Good felt on top of the world. She planned to spend a few weeks at home before going to New York, where a job with Habitat for Humanity awaited. Her mother, a middle school English teacher, and her father, a foundry mechanic, were both brimming with pride.

10%

of red light runners in fatal crashes in 2009 were teenagers.

Nearly halfway into their 70-mile trip, a chain-reaction crash set off by a red light runner sent a tractor-trailer into the opposite lane and into their car. Jay Good, who was at the wheel, and Jean Good, who rode in back and wasn't using a safety belt, died at the scene. Jacy Good, who was in the front seat, was left with a traumatic brain injury, partially collapsed lungs, a lacerated liver, 2 damaged carotid arteries, a shattered pelvis, and other injuries.

Weeks later, after she regained consciousness, Good began to learn the details of the crash. The driver of the minivan that sailed through the red light, causing the tractor-trailer to veer into the Goods' station wagon, was 18 years old, had 2 teenage passengers and, according to police, was using his cellphone when the crash occurred. He was cited for careless driving and running a red light and paid $662 in fines and other costs.

Good believes the cellphone was to blame in the May 18, 2008, tragedy. "There's no question in my mind that there would have been no accident if he had not been on his cellphone," she says.

Now 24, Good expects to wear an ankle brace for the rest of her life. She had surgery last summer to recover some function in her limp left arm. Meanwhile, she's become an outspoken campaigner against distracted driving, lobbying lawmakers, appearing on the Oprah Winfrey Show, and addressing high school students. Her activism is in part a way to honor her mother and father's memory, Good says. "I know if the roles were switched, this is what my parents would be doing for me."

BILLY RAY SPENCE, 64
LUBBOCK, TEXAS


Billy Ray Spence

"What're you boys doin'?" That's what Billy Ray Spence, better known as Billy Kool, would say when he walked into a room. And when he did, you knew the party was about to get started. Spence, a heavy equipment operator who moonlighted as a bartender, was a captivating storyteller, jokester, poker player, and briefly married bachelor who lived just down the street from his elderly mother in Lubbock, Texas. He was killed at age 64 while running an errand on the afternoon of Nov. 11, 2008.

His red 1996 Jaguar XJ6 was broadsided by a Ford Explorer whose driver ran a red light.

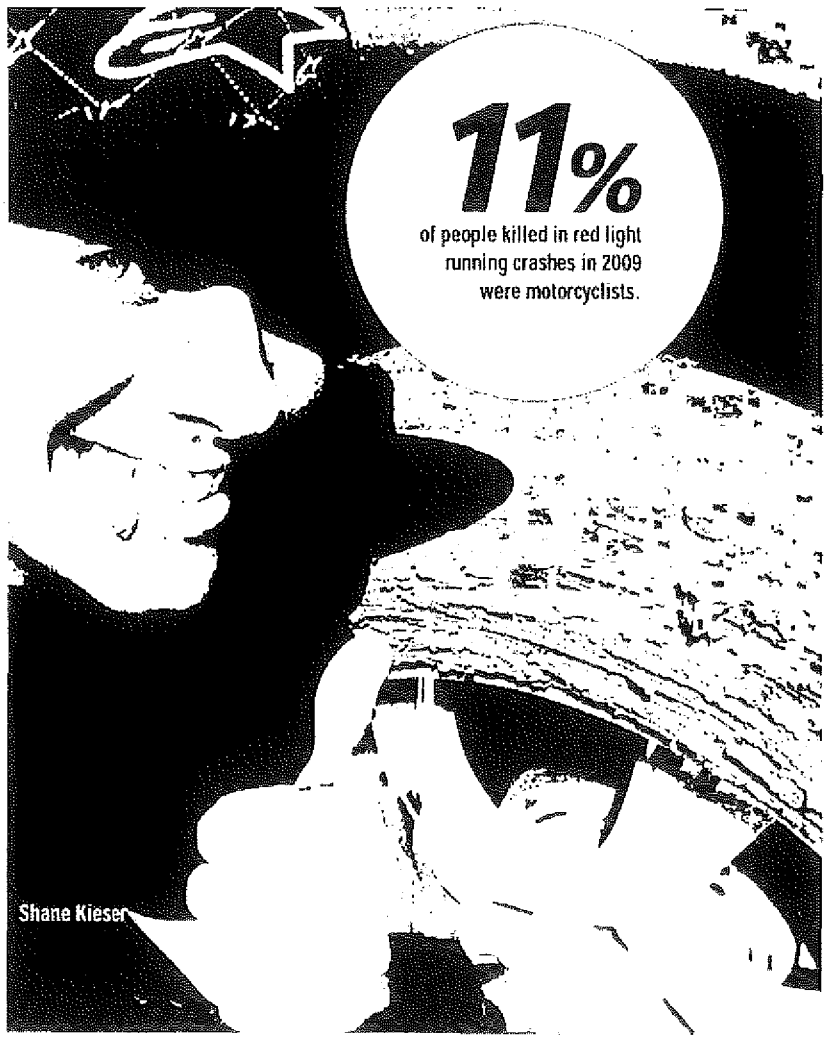
The driver of the Explorer, Marcelo Perez Jr., 35, was charged with manslaughter. Perez, who tested negative for alcohol and drugs, was no stranger to that intersection: He had been in another crash there just weeks earlier, leading to a charge against him of failing to stop and render aid. Perez died of an unrelated condition before either case could be resolved.

Sandra Johnson says her big brother went off to the Air Force in the 1960s as Billy Spence, but returned as Billy Kool. His name for everyone — or, at least, everyone he liked — was "Ace."

Billy Kool's ability to tell a story made him the life of the party. Johnson says he could captivate an audience of grown men with a card trick or a story about three little bears.

Spence retired, but never stayed that way for long. "He would always say, 'I just want to be home with nothing on but the TV,'" Johnson recalls. "And then when he'd go back to work, he'd say, 'I felt like putting clothes on, so I went back to work.'"

SHANE KIESER, 19
LAS VEGAS, NEVADA



Shane Kieser

Shane Kieser loved wheels, and he loved adrenaline. When he wasn't racing at the BMX bicycle track, he was often doing stunts in the concrete bowl near his home in Las Vegas. His mother gave him his own insurance card in case she was at work the next time he landed on his face.

When Kieser got a motorcycle, his mother, Terri, wasn't thrilled but she took it in stride. Shane knew the risks and never rode without a helmet.

Early on the morning of Aug. 19, 2008, Kieser and his girlfriend headed to Walmart. They were night owls, says his mother, and "unfortunately, in Vegas everything is open at all hours of the day."

At 5:30 am, Kieser's 1994 Honda CBR slammed into a Toyota Corolla, killing him and injuring his girlfriend. The Corolla's driver wasn't hurt. Police say 3 witnesses saw the motorcycle go through a red light. Terri Kieser says that doesn't square with what she knows about her son.

"I was always the first to go, 'What did Shane do?'" she says with a laugh, before turning serious. "But I want to say no. No. Maybe a yellow that he felt he couldn't safely stop at. But running a red with his girlfriend on the back? Never. Shane would never be crazy with somebody else's life."

An aspiring mechanic, Shane was known for his goofy sense of humor. "Birthday parties — the candles were usually up his nose like a walrus," his mother says.

Every year on his birthday, Terri Kieser invites Shane's friends to a nearby mountain where he loved to ride his bike. She brings along homemade waffles — his favorite.

MARCUS MAY-COOK, 3

LANSING, MICHIGAN

Mindy Cook still can hear her little boy saying, "Mommy, I want you," the way he used to, his arms raised over his head so that she would scoop him up.

Marcus May-Cook was just 3 when he died on Aug. 10, 2008. Two days before, a 17-year-old unlicensed driver broadsided the car Marcus was riding in near his home in Lansing. Police determined that the teenage driver, Brianca Alexander, had gone through a red light. Marcus was asleep when it happened and never woke up.

"I see no end to this grief," Cook wrote in a letter she read at Alexander's sentencing hearing last September, more than 2 years after Marcus' death.

Alexander, who pleaded guilty to driving without a valid license, causing death, was sentenced to 2 ½ to 15 years in prison. Her mother received a year in jail with work release for allowing her daughter, who never had so much as a learner's permit, to take the car.

Marcus was an exuberant little boy who was convinced he would grow up to be Spider-Man. He wore a Spider-Man costume on Halloween — and kept wearing it long after the candy was gone. He even tried to climb the walls like the superhero, knocking over a shelf once in the process.

22%

of red light runners in fatal crashes in 2009 were driving without licenses.

Cook knows that Marcus would have been excited to start kindergarten this past fall. He often imagined heading to school just like big sister Makyla. When their mother packed Makyla's lunch, Marcus insisted on one to carry to his grandmother's house, where he stayed while his mom was at work.

On the Friday of the crash, Marcus and his sister were riding along as their aunt drove their grandmother to her part-time job. Their cousin was in the back seat with them.

Cook was at work when she got the call shortly before 5 pm. When she saw Marcus at the hospital, he didn't look injured, but his brain had been severely damaged. By Sunday, tests confirmed that nothing could save him.

Cook's mother, who was riding in front, had a fractured skull and other injuries. She is no longer able to work. Makyla, who was 6, was injured but recovered. She and her cousin were riding in boosters, while Marcus was buckled in a child restraint.

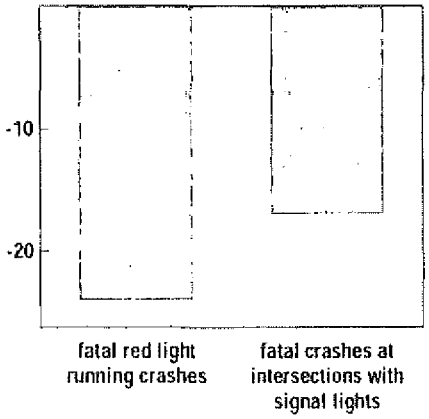
Cook now has another son and says 1-year-old Marrion has begun to recognize his brother in photographs.

"Marcus," says Cook, "is always talked about."

(continued from p. 2) over 200,000, the researchers compared those with red light camera programs to those without. Because they wanted to see how the rate of fatal crashes changed after the introduction of cameras, they compared two periods, 2004-08 and 1992-96. Cities that had cameras during 1992-96 were excluded from the analysis, as were cities that had cameras for only part of the later study period.

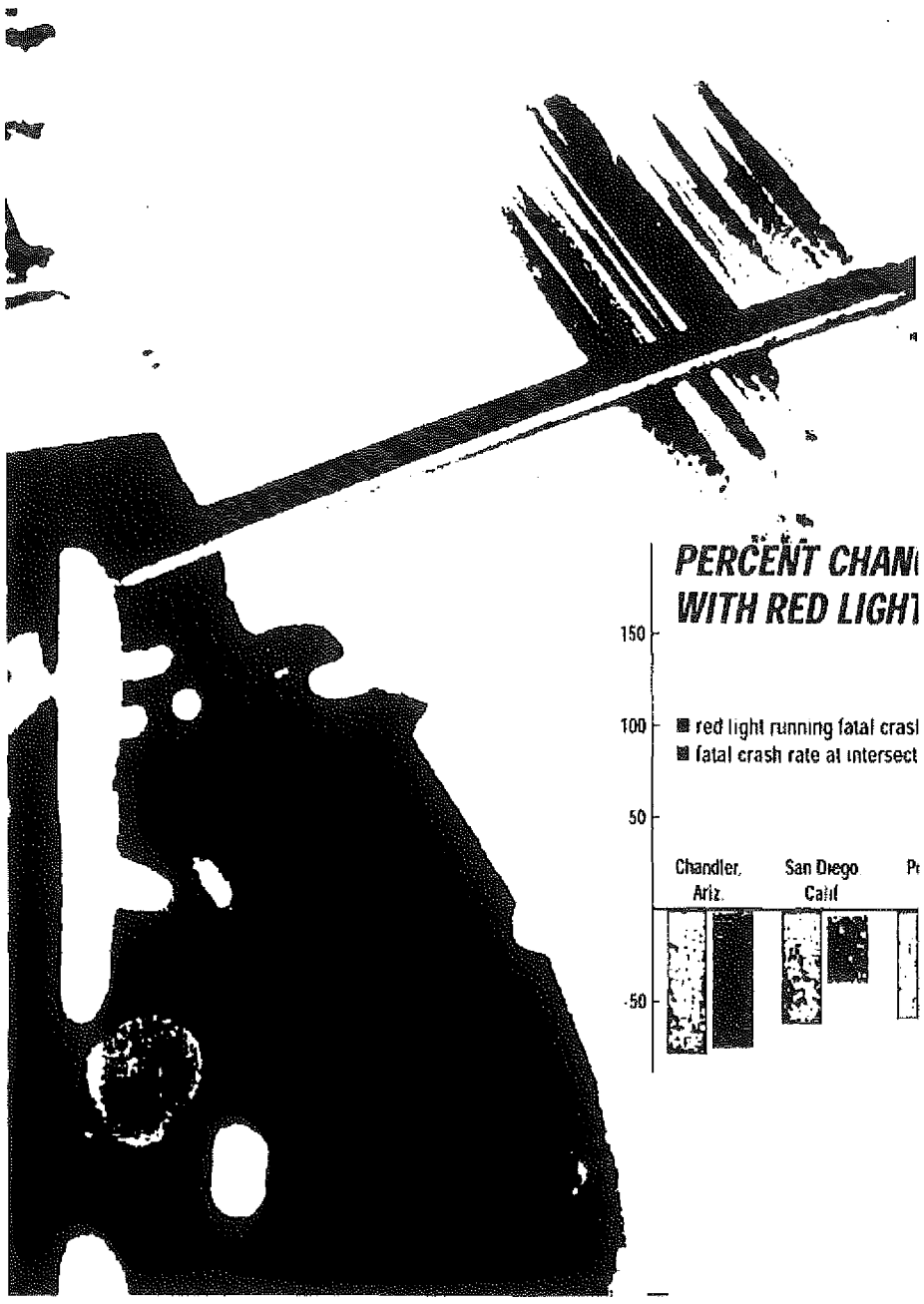
Researchers found that in the 14 cities that had cameras during 2004-08, the combined per capita rate of fatal red light running crashes fell 35 percent, compared with 1992-96. The rate also fell in the 48 cities without camera programs in either period, but only by 14 percent.

PERCENT DIFFERENCES IN ACTUAL CRASH RATES DURING 2004-08 IN CITIES WITH RED LIGHT CAMERAS VS. EXPECTED RATES WITHOUT CAMERAS



The rate of fatal red light running crashes in cities with cameras in 2004-08 was 24 percent lower than it would have been without cameras. That adds up to 74 fewer fatal red light running crashes or, given the average number of fatalities per red light running crash, approximately 83 lives saved.

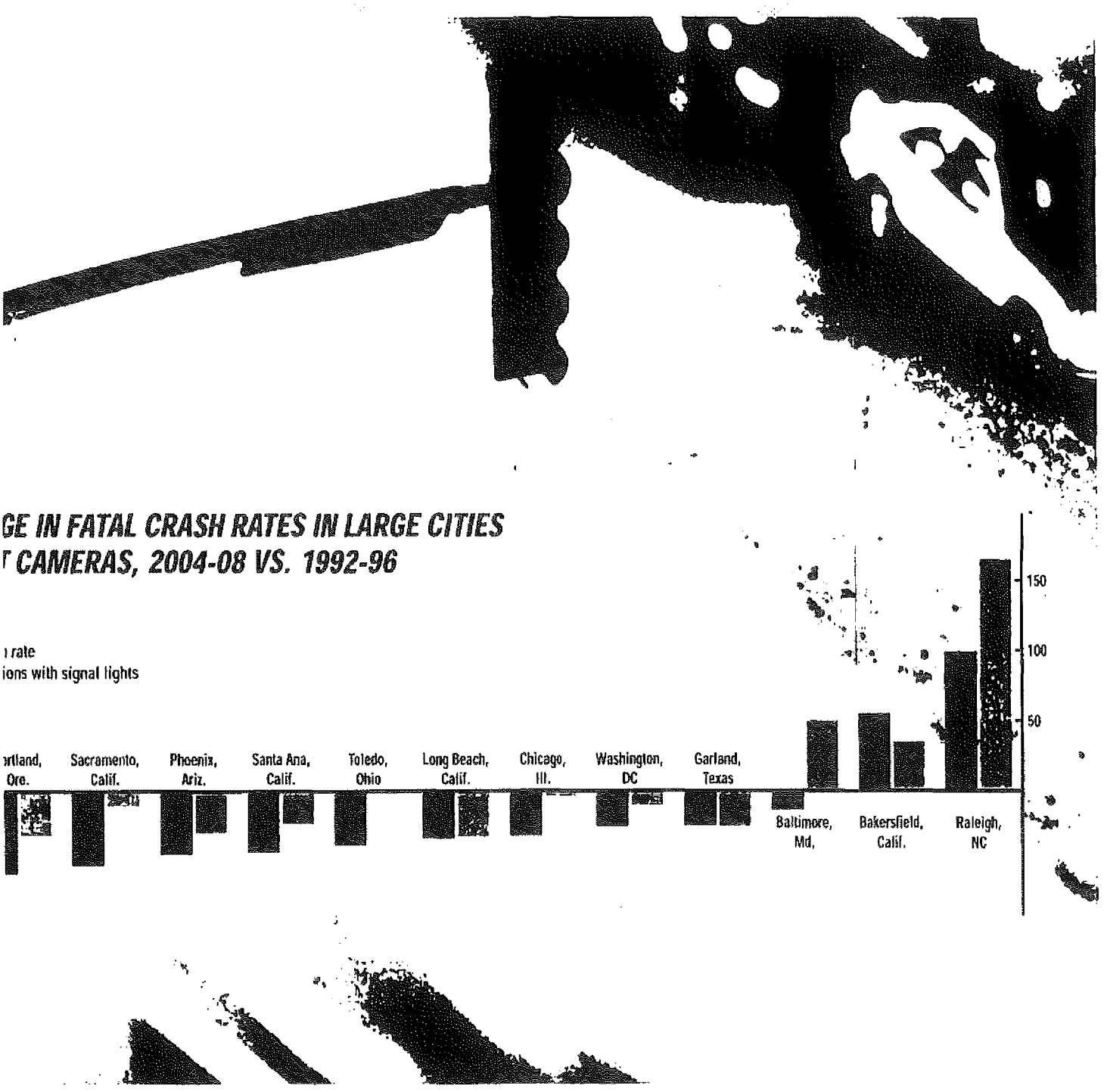
That's a substantial benefit, but the actual benefit is even bigger. Red light cameras also reduce fatal intersection crashes that aren't attributed to red light running. One possible reason for this is that red light running fatalities are undercounted due to a lack of witnesses to explain what happened in a crash. Drivers also may be more cautious in general when they know cameras are around.



The rate of all fatal crashes at intersections with signals — not just red light running crashes — fell 14 percent in the camera cities and crept up 2 percent in the noncamera cities. In the camera cities, there were 17 percent fewer fatal crashes per capita at intersections with signals in 2004-08 than would have been expected. That translates into 159 people who are alive because of those automated enforcement programs.

If red light cameras had been in place for all 5 years in all 99 US cities with populations over 200,000, a total of 815 deaths could have been avoided.

"Examining a large group of cities over several years allowed us to take a close look



GE IN FATAL CRASH RATES IN LARGE CITIES
r CAMERAS, 2004-08 VS. 1992-96

at the most serious crashes, the ones that claim people's lives," says Anne McCartt, Institute senior vice president for research and a co-author of the study. "Our analysis shows that red light cameras are making intersections safer."

Results in each of the 14 camera cities varied. The biggest drop in the rate of fatal red light running crashes came in Chandler, Ariz., where the decline was 79 percent. Two cities, Raleigh, NC, and Bakersfield, Calif., experienced an increase.

"We don't know exactly why the data from Raleigh and Bakersfield didn't line up with what we found elsewhere," McCartt says. "Both cities have expanded geographically over the past two decades, and that probably has a lot to do with it."

A bigger mystery is why, in the face of mounting evidence that red light cameras make communities safer, some people continue to resist them. Rather than feeling angry at the sight of cameras going off, red light runners should thank their lucky stars they're alive to pay their tickets.

For a copy of "Effects of red light camera enforcement on fatal crashes in large US cities" by W. Hu et al., write: Insurance Institute for Highway Safety, 1005 N. Glebe Rd., Arlington, Va. 22201, or email publications@iihs.org.

CITY USES CAMERAS AS SAFETY TOOL, NOT MONEYMAKER

If the purpose of red light cameras is to raise cash from unsuspecting drivers, officials in Springfield, Mo., did everything wrong.

Before even switching on their cameras in June 2007, traffic engineers reduced red light running by changing the length of yellow lights to make signals consistent across the city. The launch of the cameras was preceded by a major education campaign urging drivers to "respect red," and once cameras were installed their locations were clearly marked. Officials put the cameras at intersections with the biggest traffic volumes to get the message to the greatest number of drivers though those intersections weren't necessarily where the most violations occurred.

So what happened with that easy money for the budget? Two years and eight months after the cameras were switched on, the program was $33,000 in the red.

Fortunately for the city, making money was never the goal. Improving safety was, and by that measure, the cameras were a success. City officials say their data show red light running crashes decreased both at camera-equipped intersections and citywide. Citations fell 36 percent to an average of 1.05 a day per camera.

Springfield traffic engineer Jason Haynes says the fact that the program didn't make money helped to maintain community support. Another plus was that the vendor operating Springfield's cameras had no vested interest in busting drivers. Instead of paying the company per violation, Springfield paid a flat fee for each camera.

The biggest key to the program's success, says Earl Newman, who recently retired as Springfield's assistant director of public works, is that the city first did all it could from a traffic engineering standpoint to reduce red light running. That meant fixing the yellow timing problem, which the city discovered as it was preparing to install the cameras. The problem stemmed from the fact that some intersections were controlled by the state and others by the city, and the state signals had longer yellow times. There was rampant red light running at the city intersections, perhaps because drivers used to state roads weren't expecting the lights to change so quickly.

Springfield and the state transportation department worked out a compromise, lengthening the yellow phase at many signals and shortening it slightly at others. Only after giving drivers months to get used to the new times did the city switch on the cameras, which led to a further reduction in red light running.

City surveys showed high support for red light cameras, but the program had determined opponents. A legal challenge brought the program to a halt last March, when the Missouri Supreme Court ruled that Springfield's administrative hearing process for contested citations was inadequate.

Haynes says the city's lawyers have come up with a fix and that a new contract for cameras is in the works. But Newman says he's not sure whether the program has much of a future now that violations have fallen so low. Too few citations could mean the red light cameras won't pay for themselves.

"Money is the issue here whether we like it or not," he says. People don't want the cameras to make money, but "as soon as it comes to the point of the taxpayers paying for it, it's a problem again."

HOW RED LIGHT CAMERAS WORK

Cameras like the one at right automatically photograph vehicles whose drivers run red lights. The cameras are connected to the traffic signal and to sensors that monitor traffic flow just before the crosswalk or stop line. The system continuously monitors the traffic signal, and the camera captures any vehicle that doesn't stop during the red phase. Depending on the particular technology, a series of photographs and/or a video clip shows the red light violator prior to entering the intersection on a red signal, as well as the vehicle's progression through the intersection. Tickets typically are mailed to owners of violating vehicles, based on a review of photographic evidence.

QUESTIONS AND ANSWERS ABOUT RED LIGHT CAMERAS

Do red light cameras violate privacy?

No. Driving is a regulated activity on public roads. By obtaining a license, a motorist agrees to abide by certain rules, such as to obey traffic signals. Neither the law nor common sense suggests drivers should not be observed on the road or have their violations documented. Red light camera systems can be designed to photograph only a vehicle's rear license plate, not vehicle occupants, although in some places the law requires a photograph of the driver.

Aren't longer yellow times more effective?

Providing adequate yellow time and a brief phase when all signals are red is important and can reduce crashes but doesn't eliminate the need for, or potential benefits of, red light cameras. An Institute study conducted in Philadelphia, Pa., evaluated effects on red light running of first lengthening yellow signal timing by about a second and then introducing red light cameras. While the longer yellow reduced red light violations by 36 percent, adding camera enforcement further cut red light running another 96 percent.

Do cameras raise the risk of rear-enders?

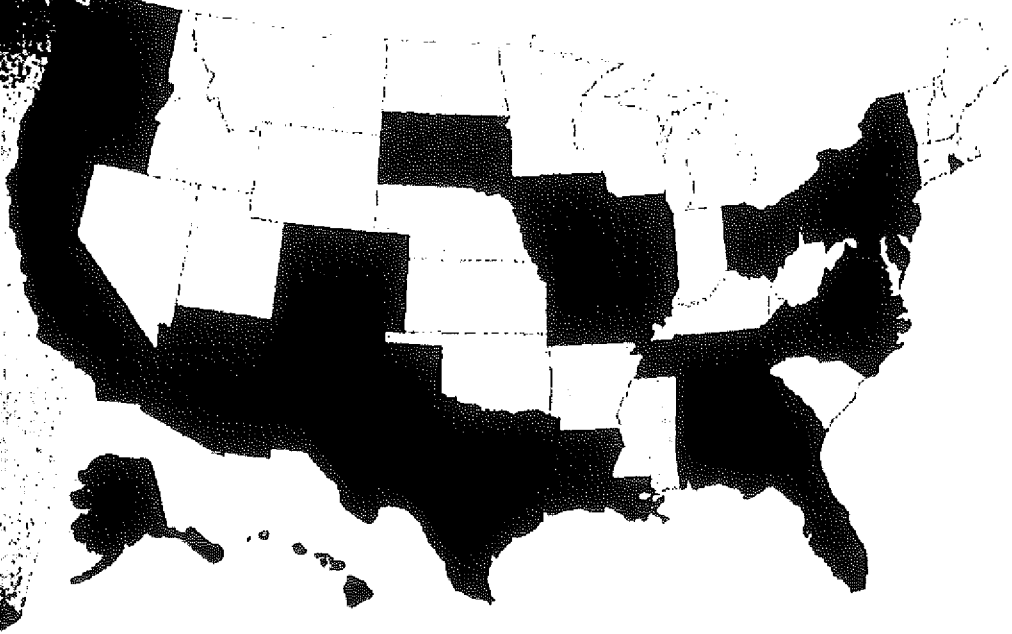
Some studies have reported that while red light cameras reduce front-into-side collisions and overall injury crashes, they can increase rear-end crashes. However, rear-end crashes tend to be much less severe than front-into-side crashes, so the net effect is positive. Moreover, not all studies that have examined rear-end collisions have found an increase.

Are special laws needed for cameras?

Before cameras may be used, state or local laws must authorize enforcement agencies to cite red light violators by mail. The legislation makes the vehicle owner responsible for the ticket. In most cases, this involves establishing a presumption that the registered owner is the vehicle driver at the time of the offense and providing a mechanism for vehicle owners to inform authorities if someone else was driving.

Another option is to treat violations captured by red light cameras as the equivalent of parking tickets. If, as in New York, camera violations are treated like parking citations, the law can make registered vehicle owners responsible without regard to who was driving. The cameras are authorized in about half of US states.

STATES WHERE RED LIGHT CAMERAS ARE IN USE

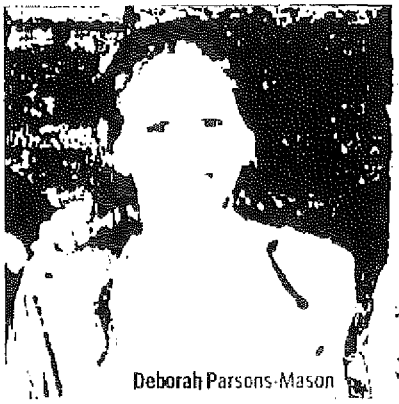


For more questions and answers go to iihs.org/research/qanda/rlr.html.

25%
of red light runners in fatal crashes in 2009 had blood alcohol concentrations 0.08 percent or higher.

Deborah Parsons-Mason, second from right

DEBORAH PARSONS-MASON, 47
SAN JOSE, CALIFORNIA



Deborah Parsons-Mason

Deborah Parsons-Mason worried about walking in her San Jose neighborhood, especially on weekend nights when the nearby bars were full. Drunk driving was a problem in the area, and the family had seen cars totaled just outside their window. The 47-year-old mother warned her 4 kids to use extra caution crossing the street.

But on a Friday 6 days before Christmas 2008, Parsons-Mason would have had her mind on other things. She had just been out shopping, and her mother was flying in the next day.

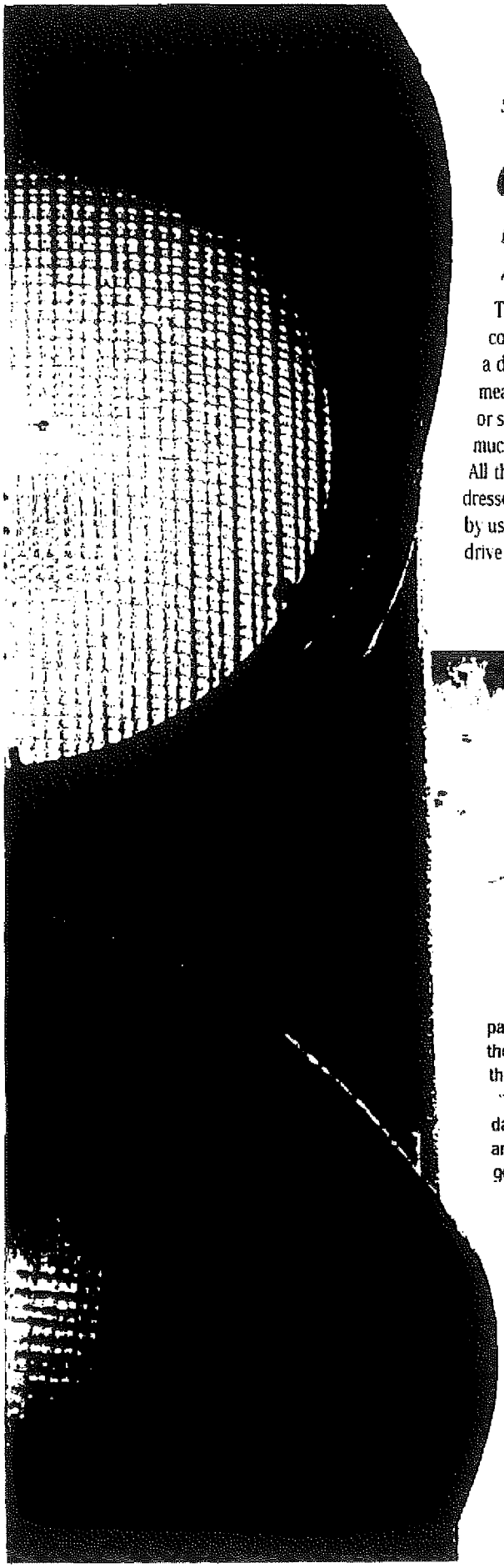
That night, Parsons-Mason walked to the corner store with her 14-year-old son, Jimmy, to buy some candy bars. On the way home, a pickup truck blew through a red light, striking Parsons-Mason in the crosswalk. As her horrified son watched, she was thrown in the air, landing in her next-door neighbor's driveway. Her husband and her other son heard the crash from inside the house and ran outside to see what had happened.

The driver, Gilberto Vasquez Reyes, 63, had a blood alcohol concentration of 0.21 percent, more than 2 1/2 times the legal limit. He pleaded no contest to vehicular manslaughter but died 5 days before sentencing. He was facing 4 to 6 years in prison.

Parsons-Mason worked as a cashier at Lucky supermarket and was heavily involved in her children's schooling, says her sister Kimberly Sabino. During their own childhood in southern California, Debi, the oldest of 3 girls, was like a second mother, says Sabino, who was the youngest and 5 years her junior.

Two years on, the family's grief is still raw. Jimmy constantly replays that night in his head, wishing he had seen the truck coming and pushed his mother out of harm's way, says Parsons-Mason's mother, Diane Courtney.

Sabino says it's hard for her to accept that Reyes, who had several prior convictions for driving under the influence, didn't face a more serious charge than manslaughter. "She wasn't just hit. She was slammed into," Sabino says. "The way my sister was killed was murder."



COMMON THREAD BINDS CRASHES DESPITE DIFFERENT STORY LINES

A comment by Institute president Adrian Lund

The fatal crashes described on these pages are all different, but they have one thing in common: Someone ran a red light. The circumstances of a particular crash may point to a deeper cause, so it's tempting to seek a deeper solution. After all, we know that red means stop. We learned that long before we learned to drive. If people disobey red lights, or simply fail to see them, we assume there's a reason. It must be because they drank too much or they're fiddling with their cellphones or they're inexperienced or reckless drivers. All those things may be true, and many of the underlying causes can and should be addressed. But we can prevent many red light running crashes, regardless of the circumstances, by using cameras to enforce the law. The fact is that the threat of a ticket makes everyone drive more carefully. The data prove it.

AMBER CORNETT, 16

BETHEL TOWNSHIP, OHIO

On Nov. 22, 2008, Amber Cornett dutifully called her parents to tell them she was on her way home after spending the night at a friend's house and going out for breakfast.

Cornett was belted in the front seat when the 2003 Chevrolet Cavalier her friend was driving was broadsided by a pickup truck at an intersection in rural Bethel Township in Clark County, Ohio. She was killed just 6 days before her 17th birthday.

Cornett's friend told police she thought she had a green light. The driver and the passenger of the other vehicle insisted their light was green. A third girl who was in the Cavalier's back seat and was injured in the crash couldn't recall approaching the intersection. Police were unable to determine fault and didn't file charges.

"All we really got was no answers," says Mack Cornett, Amber's father. The daughter he lost was "every parent's dream," Cornett says. She was a good student and made friends easily. "I know she was looking forward to getting the chance to get out on her own."

On tribute pages on the web, friends remember Amber's effervescent personality. They lament that she'll never meet their new boyfriends and confide that they can't bear to delete her number from their cellphones.

Mack Cornett has his own way of remembering: The 46-year-old machinist manager keeps in his Bible a picture of Amber with a big smile, taken the summer before she died. Cornett says he's disappointed that neither driver has reached out to say they're sorry. He would be inclined to forgive.

"People run lights. I don't think the majority of people who run them mean to run them. They have distractions," he says.

"How many times have you done something and you got away with it? You look down, you look at your watch, you turn the knob on the stereo, you laugh at a joke — you miss the light."

STATUS REPORT

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

1005 N. Glebe Rd., Arlington, VA 22201
Phone 703/247-1500 Fax 247-1588
Internet: www.iihs.org
Vol. 46, No. 1, Feb. 1, 2011

One family's remembrance

The Insurance Institute for Highway Safety is a nonprofit scientific and educational organization dedicated to reducing deaths, injuries, and property damage from crashes on the nation's highways. The Institute is wholly supported by auto insurers:

AAA Mid-Atlantic Insurance Group
AAA Northern California, Nevada, and Utah
ACE Private Risk Services
Affirmative Insurance
Agency Insurance Company of Maryland
Alfa Alliance Insurance Corporation
Alfa Insurance
Allstate Insurance Group
American Family Mutual Insurance
American National Property and Casualty Company
Ameriprise Auto & Home
Amica Mutual Insurance Company
Auto Club Enterprises
Auto Club Group
Bituminous Insurance Companies
California Casualty Group
Capital Insurance Group
Chubb & Son
Colorado Farm Bureau Mutual Insurance Company
Concord Group Insurance Companies
Cotton States Insurance
COUNTRY Financial
Direct General Corporation
Discovery Insurance Company
Erie Insurance Group
Esurance
Farm Bureau Financial Services
Farm Bureau Insurance of Michigan
Farm Bureau Mutual Insurance Company of Idaho
Farmers Insurance Group of Companies
Farmers Mutual of Nebraska
Fireman's Fund Insurance Company
First Acceptance Corporation
Florida Farm Bureau Insurance Companies
Frankenmuth Insurance
Gainsco Insurance
GEICO Group
Georgia Farm Bureau Mutual Insurance Company
GMAC Personal Lines Insurance
Grange Insurance
Hanover Insurance Group
The Hartford
Haulers Insurance Company, Inc.
High Point Insurance Group
Homeowners of America Insurance Company
Horace Mann Insurance Companies
ICW Group
Imperial Fire & Casualty Insurance Company
Infinity Property & Casualty
Kemper, A Unitrin Business
Kentucky Farm Bureau Insurance
Liberty Mutual Insurance Company
Louisiana Farm Bureau Mutual Insurance Company
Mercury Insurance Group
MetLife Auto & Home
MiddleOak
Mississippi Farm Bureau Casualty Insurance Company
MMG Insurance
Mutual of Enumclaw Insurance Company
Nationwide
New Jersey Manufacturers Insurance Group
NLC Insurance Companies, Inc.
Nodak Mutual Insurance Company
Norfolk & Dedham Group
North Carolina Farm Bureau Mutual Insurance Company
Oklahoma Farm Bureau Mutual Insurance Company
Old American County Mutual Fire Insurance
Oregon Mutual Insurance
Palisades Insurance
Pekin Insurance
PEMCO Insurance
Progressive Corporation
Rockinghara Group
Safeco Insurance
Samsung Fire & Marine Insurance Company
SECURA Insurance
Sentry Insurance
Shelter Insurance
Sompo Japan Insurance Company of America
South Carolina Farm Bureau Mutual Insurance Company
Southern Farm Bureau Casualty Insurance Company
State Auto Insurance Companies
State Farm
Tennessee Farmers Mutual Insurance Company
Texas Farm Bureau Insurance Companies
Tokio Marine Nichido
The Travelers Companies
United Educators
Unitrin
USAA
Viceroy Insurance Company
Virginia Farm Bureau Mutual Insurance
West Bend Mutual Insurance Company
Young America Insurance Company
Zurich North America

FUNDING ASSOCIATIONS
American Insurance Association
National Association of Mutual Insurance Companies
Property Casualty Insurers Association of America

From: Lulu Dionglay <LD@sageadvisorsinc.com>
To: "V8834@lapd.lacity.org" <V8834@lapd.lacity.org>
Date: 4/18/2011 10:52 AM
Subject: Support Document for Agenda Item 8B re: Jay Beeber's Report
Attachments: 41911 Agenda Item 8B.pdf

Dear Tammy,

We would appreciate if you could kindly distribute to the Commissioners the attached supporting documents for tomorrow's board meeting in connection to agenda item # 8B re: Analysis of Jay Beeber's Report.

Thank you very much for your help.

Best regards,

Lulu Dionglay
Sage Advisors, Inc.
221 S Figueroa Street, Suite 240
Los Angeles, CA 90012
Tel: (213) 346-0400
Fax: (213) 346-0410

Capt McDonald
EOD

Lt Katona
EOD

B. DEPARTMENT'S REPORT, dated April 19, 2011, relative to Analysis of Jay Beeber's report entitled "Safer Streets in Los Angeles: Why engineering countermeasures are more effective than photo enforcement in reducing red light related crashes" (City Council Motion 11-0125) [BPC #11-0158]

Recommendation(s) for Board action:

1. APPROVE the Department's report and TRANSMIT to the City Council.

Capt Maltez
SOE Area

C. DEPARTMENT'S REPORT, dated April 6, 2011, relative to Recommendation for the Medal of Valor, as set forth. [BPC #11-0149]

Recommendation(s) for Board action:

1. APPROVE the Department's report.

Peter DiCarlo
ASB

Capt Wakefield
IAID

D. DEPARTMENT'S REPORT, dated April 6, 2011, regarding Donation Approval Process Inspection – Third Quarter (IAID No. 11-016), as set forth. [BPC #11-0152]

Recommendation(s) for Board action:

1. APPROVE the Department's report.

D'Anna Markley
R&I Div

E. DEPARTMENT'S REPORT, dated April 5, 2011, relative to Proposed Addition to Council-Approved Records Retention Schedule – PDX 91, as set forth. [BPC #11-0156]

Recommendation(s) for Board action:

1. APPROVE the Department's report and TRANSMIT to the City Clerk, Records Management Officer.

D'Anna Markley
R&I Div

F. DEPARTMENT'S REPORT, dated April 5, 2011, relative to Proposed Addition to Council-Approved Records Retention Schedule – PDX 95, as set forth. [BPC #11-0155]

Recommendation(s) for Board action:

1. APPROVE the Department's report and TRANSMIT to the City Clerk, Records Management Officer.

D'Anna Markley
R&I Div

G. DEPARTMENT'S REPORT, dated April 5, 2011, relative to Proposed Addition to Council-Approved Records Retention Schedule – PDX 40, as set forth. [BPC #11-0154]

Recommendation(s) for Board action:

1. APPROVE the Department's report and TRANSMIT to the City Clerk, Records Management Officer.

dailynews.com

Mark V. Rosenker: 'Report' findings are wrong; red-light cameras save lives

By Mark V. Rosenker

Posted: 04/13/2011 04:37:55 PM PDT

Updated: 04/13/2011 04:39:35 PM PDT

DURING my tenure as a member and chairman of the National Transportation Safety Board, I had the opportunity to closely monitor trends in traffic safety. In 2003, the year I joined the board, nearly 43,000 people died on our nation's roads. I believed that we as a nation needed to do significantly more both technologically and politically to reduce loss of life. Our efforts are now beginning to bear fruit.

Recently the National Highway Traffic Safety Administration reported that traffic deaths were at a 61-year low last year.

While still an estimated 32,788 people tragically died in traffic accidents in 2010, that number represented a more than 25 percent decline since 2003 and marks the fewest traffic fatalities since 1949.

A lot of factors impacted the decline in traffic deaths. Among those are: safer vehicles; increased seat-belt use, achieved through stricter laws; more children buckled in to child restraint seats, achieved through laws designed to protect children in moving vehicles; a d ecrease in drunk driving, thanks to stricter enforcement by police and the implementation of more sobriety checkpoints; and the use of red-light and speed safety cameras to discourage drivers from running red lights and speeding.

Unfortunately, despite all of the progress that has been in reducing traffic fatalities, a vocal minority of citizens continues to advocate policies that if implemented, would reverse these trends. You know who they are, the

same groups that have opposed most of the traffic safety improvements I've just mentioned. They don't like mandatory use of seat belts and child safety seats. And they view sobriety checkpoints and traffic safety cameras as intrusions on their personal freedoms, as though it should be their God-given right to drive impaired, or speed and run red lights with impunity.

Recently, this debate has heated up in Los Angeles, where misinformation - even disinformation - about the program has been spread by groups that have made their mark by opposing government safety regulations of any kind.

These groups have used distorted facts and inaccuracies to launch a campaign to end the city's red-light safety camera program, a program that in its six-year existence has not seen a fatality at any of the 32 monitored intersections.

Nixing the cameras on the heels of the recent

dailynews.com

research study from the Insurance Institute of Highway Safety that documented how well the cameras are saving lives would be foolhardy. The IIHS researchers concluded that red-light safety cameras saved 159 lives in 2004-08 in 14 of the biggest U.S. cities. Had cameras been operating during that period in all large cities, according to the IIHS, a total of 815 deaths would have been prevented.

In 2009 red-light running killed 676 people, including more than 100 in California, and injured an estimated 113,000 nationwide. Tragically, nearly two-thirds of the deaths were victims other than the red-light running drivers - occupants of other vehicles, passengers in the red-light runners' vehicles, bicyclists or pedestrians.

In a city like Los Angeles where the climate is an almost-daily invitation for people to get out and walk, jog or cycle, taking extra steps to protect the nonmotoring public from death or injuries makes sense.

I strongly urge the city of Los Angeles to closely review the credible and scholarly research studies and reject the so-called "reports" generated by self-proclaimed "experts" whose true mission is to curb all traffic safety initiatives implemented by government.

There no question there's room for Los Angeles to fine-tune its traffic safety camera program. But it would clearly be a bad idea to eliminate it altogether.

Mark V. Rosenker of Virginia was appointed by President Bush to two terms at the National Traffic Safety Board beginning March 2003. He currently is a senior advisor to the National Coalition for Safer Roads.

Commissioner and Council Members, 4/15/2011

My name is Professor Simon Washington. I was recently forwarded a report titled "SAFER STREETS IN LOS ANGELES: Why Engineering Countermeasures Are More Effective than Photo Enforcement in Reducing Red-Light Related Crashes" by Jay Beeber from Safer Streets LA—an interest group that according to their web site is against red light cameras. Prior to providing a critical review this report, I first outline my relevant credentials and abilities.

As a traffic safety engineer, researcher, and professor, I have dedicated my professional life to measuring, understanding, and improving traffic safety on our nation's roadways. Prior to joining the faculty at the Queensland University Centre for Accident Research and Road Safety in Australia—one of the premier road safety research centers in the world, I was Director of the Safe Transportation Research and Education Center (SAFETREC) at the University of California, Berkeley. I have also served on the academic faculties of Arizona State University, the University of Arizona, and the Georgia Institute of Technology. At each of these research intensive institutions I have taught graduate level courses in transportation safety. During this same period I directed over $8 Million in federal, state, and locally supported research on road safety and transportation planning research—including three separate studies evaluating red light and speed cameras in the US. Finally, I have served and continue to serve on matters of road safety on numerous research boards and advisory committees including those at the National Academy of Sciences Transportation Research Board (TRB) and the National Highway Traffic Safety Administration (NHTSA).

Perhaps most relevant to the review of the subject report, I serve on the editorial boards of five peer reviewed journals, three of which focus exclusively on road safety. One of these journals—Accident Analysis & Prevention, is the premier academic journal on road safety in the world. A second journal for which I serve as Associate Editor in charge of transportation safety—the American Society of Civil Engineering Journal of Transportation Engineering—is the oldest running journal in the US. My primary role as editor of these journals is to coordinate the technical reviews of international papers on road safety by authors throughout the world, and to ultimately accept or reject these papers as credible contributions to the road safety profession.

I am significantly concerned by the focused attention being given to a report authored by a member of the public who I understand does not have any expertise in this area and sponsored by an agency that is categorically against red light cameras. Safer Streets LA clearly is not an organization interested in a balanced review of red light cameras. A quick search of the peer-review literature reveals not a single peer review report or paper authored by Jay Beeber—thus the report's author has not established credibility in the road safety profession or been vetted by the professional community.

The introduction of the report uses rather tricky wording to imply that credible agencies have supported the research. If read carefully, the author is saying that the reports reviewed in the course of preparing the paper were conducted and sponsored by credible agencies; however, the report itself does not appear to be sponsored or endorsed by any credible agency such as the ITE or the Texas DOT.

Most of the compelling and conclusive peer reviewed research documenting the benefits of red-light cameras and their effectiveness is conspicuously missing from this report. Ample research has been conducted in the US and abroad documenting the benefits of red light running on reducing crashes; however, the vast majority of this research has been omitted from the report. Two examples of carefully scrutinized national reports are NHTSA's report "Countermeasures that Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 5th Edition, 2010" and the Insurance Institute of Highway Safety's national review of photo enforcement published in ITE, "Two

Decades of Photo Enforcement in the United States: A Brief Summary of Experience and Lessons Learned" (ITE, Vol 80, Issue 11, 20-24). Both of these reports convey an unbiased review of the limitations and benefits of red light cameras deployed in the US, and conclude that the benefits in terms of lives saved and injuries reduced are generally consistent, significant, and reliable.

By focusing solely on engineering countermeasures, the Beeber report ignores the human behavior aspect that cameras are intended to prevent—intentional red light running. Red light cameras are extremely effective at preventing illegal and dangerous behavior, behavior that can lead to serious injuries and death, while engineering countermeasures are not effective at deterring poorly intentioned driver behavior. Another classic example of this is impaired driving, which is difficult or impossible to deter with engineering countermeasures alone; behavioral interventions are needed to effectively combat impaired driving also.

The report suggests that engineering improvements alone such as adjustments to yellow times and all red clearance intervals can sufficiently improve the safety of intersections. This is simply not supported by the evidence. Many competent traffic engineers throughout the US have adjusted signal timing at intersections trying to reduce red-light-running related crashes and violations with positive but limited success. When automated cameras have been installed at these locations with high red light violations, on average the number of associated crashes have been reduced significantly and well beyond those achieved through signal timing enhancements alone.

In conclusion, the non-peer reviewed report by Mr. Beeber attempts to selectively present information and data to discredit the LA photo red light enforcement program and red light camera programs in general. Mr. Beeber has not established credibility in the road safety profession, and the agency he represents clearly takes a biased position on red light cameras. This report would not be used by professional engineers or state departments of transportation to inform critical decisions about the installation or continuation of red light camera programs. Other, widely accepted and peer reviewed reports should be used to inform such decisions. The professional literature and experience in the US and internationally suggests that Red Light Safety Camera programs—properly deployed—increase traffic safety in a meaningful way and ultimately save lives.

Please do not hesitate to contact me if you have further questions,

Sincerely,

Professor Simon Washington (simon.washington@qut.edu.au)
Queensland Transport and Main Roads Endowed Chair of Transport
School of Urban Development, Faculty of Built Environment and Engineering
Centre for Accident Research and Road Safety (CARRS-Q), Faculty of Health
Queensland University of Technology, 2 George St GPO Box 2434
Brisbane Qld 4001 Australia
Tel: +61 7 3138 9990
www.bee.qut.edu.au
www.carrsq.qut.edu.au

National Coalition
for Safer Roads

Contact for more information & interview requests:
Stacey Radnor at info@saferoadssavelives.org or 202-870-6668

NATIONAL ROAD SAFETY COALITION CALLS FOR KEEPING RED LIGHT SAFETY CAMERAS IN THE CITY OF LOS ANGELES

Monday, April 4, 2011 – The National Coalition for Safer Roads (NCSR) today called on the City of Los Angeles to continue its highly successful red light safety camera program. NCSR President and Executive Director David Kelly said the program has proven it makes communities safer.

"There is a mounting body of evidence showing red light safety cameras change dangerous driver behavior — saving lives and reducing injuries," said Kelly, who is also the former acting administrator of NHTSA. "L.A. residents and officials just need to look at the local and national results to see the positive effects of these safety programs."

In a February letter to the city's Board of Police Commissioners, Los Angeles Chief of Police Charlie Beck highlighted the "measurable safety improvements" that resulted from the city's Photo Red Light (PRL) Program.

"From January 2004 to December 2009, red-light collisions at PRL intersections have decreased by 63 percent," wrote Beck. "Additionally, there has been an overall decrease of 10 percent in all types of collisions, and no red light related fatalities since program activation (compared to five fatalities in the three years prior to PRL enforcement from January 2004 to December 2006)."

These findings mirror those of a recent national study from the Insurance Institute for Highway Safety. Red light safety cameras helped save more than 150 lives in the 14 biggest U.S. cities from 2004 to 2008, according to IIHS. Had the cameras been operating in all 99 U.S. cities with populations over 200,000, more than 800 lives could have been saved.

David Kelly is NCSR's principal spokesman and representative before state and national policymaking bodies. He is the former acting administrator of NHTSA. President Bush nominated him to the position after Kelly served as the agency's Chief of Staff. He also served as director of the U.S. National Safety Council's Airbag & Seat Belt Campaign.

To find more information about improving road safety, visit www.saferoadssavelives.org and follow @SaferRoadsUSA on Twitter and on Facebook at http://www.facebook.com/SaferRoadsUSA.

SPECIAL ISSUE: RED LIGHT RUNNING

STATUS REPORT

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

Vol. 46, No. 1, Feb. 1, 2011

The red light runners think they've been wronged. They're convinced that the cameras documenting their violations are nothing more than a scheme to pick the pockets of motorists. The truth is simpler:

RED LIGHT RUNNING KILLS

and red light cameras save lives. In fact, they saved 159 lives in 2004-08 in the 14 biggest US cities with cameras, a new Institute analysis shows. If cameras had been operating during that period in all cities with populations of more than 200,000, a total of 815 fewer people would have died.

Camera opponents don't acknowledge the connection between those whose red light running sets off a benign flash and those who cause a deadly collision. Instead, they argue about "big brother" and equate fines for violations with taxes on drivers.

Not everyone who runs a red light is part of this group. No doubt, most violators calmly take their lumps, paying their tickets and vowing to be more careful. But

a vocal minority get angry, and their outrage gets broadcast on the internet, magnified by the media, and channeled into campaigns to ban red light cameras on the local or state level. When officials try to assure the public that cameras are about safety, not revenue, they are all but drowned out by the protests of these aggrieved drivers.

"Somehow, the people who get tickets because they have broken the law have been cast as the victims," says Institute president Adrian Lund. "We rarely hear about the real victims — the people who are killed or injured by these lawbreakers."

People like Deborah Parsons-Mason, a California mother of 4 who was fatally hit by a red light runner while crossing the street near her home. Or Marcus May-Cook, who was sleeping in his car seat when a red light runner ended his life after only 3 years. Or Jacy Good who was permanently disabled and lost both her parents in a red light running crash just hours after her college graduation. The Institute is highlighting their stories and others on these pages to bring the discussion back to the real victims.

Red light running killed 676 people and injured an estimated 113,000 in 2009. Nearly two-thirds of the deaths were people other than the red light running drivers — occupants of other vehicles, passengers in the red light runners' vehicles, bicyclists, or pedestrians.

Since the 1990s, communities have used red light cameras as a low-cost way to police intersections. The number of cities embracing the technology has swelled from just 25 in 2000 to about 500 today.

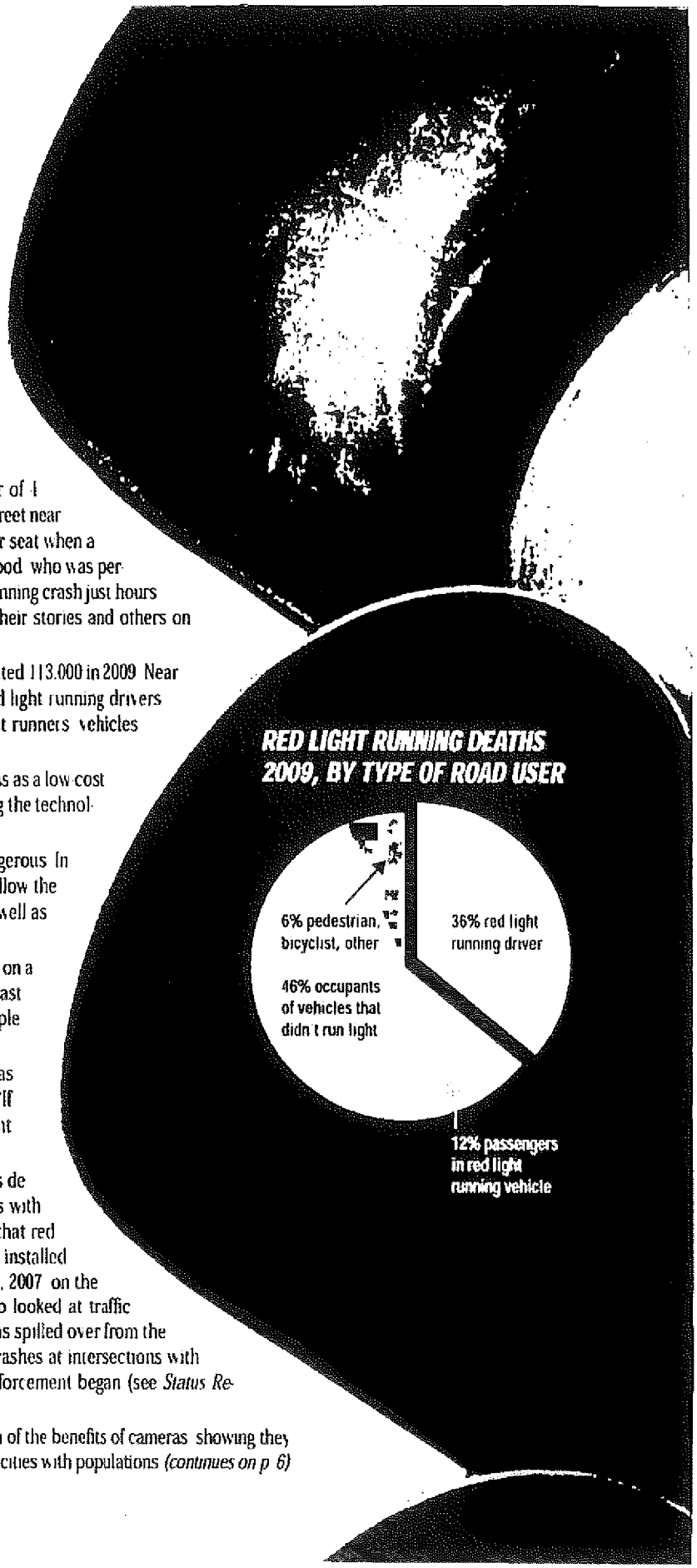
Without cameras, enforcement is difficult and often dangerous. In order to stop a red light runner, officers usually have to follow the vehicle through the red light, endangering themselves as well as other motorists and pedestrians.

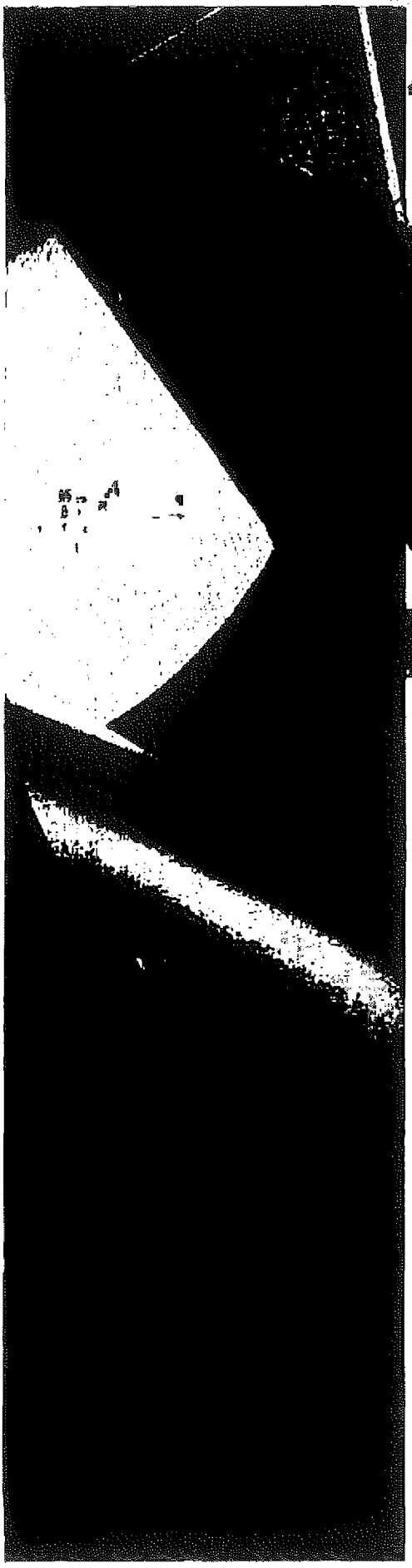
Moreover, the manpower required to police intersections on a regular basis would make it prohibitively expensive. In contrast, camera programs can pay for themselves by requiring people who break the law to shoulder the cost of enforcing it.

"The cities that have the courage to use red light cameras despite the political backlash are saving lives," Lund says. "If they are able to recover some of their traffic enforcement costs at the same time, what's wrong with that?"

Previous research has established that red light cameras deter would-be violators and reduce crashes at intersections with signals. Institute studies of camera programs have found that red light violations fell at intersections where cameras were installed (see *Status Report*, March 7, 1998, Dec. 5, 1998, and Jan. 27, 2007 on the web at iihs.org). In two of those studies, researchers also looked at traffic lights without cameras and found the decrease in violations spilled over from the camera-equipped intersections. In Oxnard, Calif., injury crashes at intersections with traffic signals fell 29 percent citywide after automated enforcement began (see *Status Report*, April 28, 2001; on the web at iihs.org).

The Institute's latest study provides powerful confirmation of the benefits of cameras, showing they reduce deaths throughout entire communities. Looking at US cities with populations *(continues on p. 6)*





Clockwise from left, J[illegible] and [illegible] Good

Jacy Good on day of crash

JEAN GOOD AND JAY GOOD, 58

MAIDENCREEK TOWNSHIP, PENNSYLVANIA

Hours after Jacy Good's graduation from Muhlenberg College in Allentown, Pa., she and her parents packed the family's 1989 Oldsmobile station wagon, strapped a sofa to the roof, and headed home to Lititz, a tiny Lancaster County town.

At 21, Good felt on top of the world. She planned to spend a few weeks at home before going to New York, where a job with Habitat for Humanity awaited. Her mother, a middle school English teacher, and her father, a foundry mechanic, were both brimming with pride.

10%
of red light runners in fatal crashes in 2009 were teenagers.

Nearly halfway into their 70-mile trip, a chain-reaction crash set off by a red light runner sent a tractor-trailer into the opposite lane and into their car. Jay Good, who was at the wheel, and Jean Good, who rode in back and wasn't using a safety belt, died at the scene. Jacy Good, who was in the front seat, was left with a traumatic brain injury, partially collapsed lungs, a lacerated liver, 2 damaged carotid arteries, a shattered pelvis, and other injuries.

Weeks later, after she regained consciousness, Good began to learn the details of the crash. The driver of the minivan that sailed through the red light, causing the tractor-trailer to veer into the Goods' station wagon, was 18 years old, had 2 teenage passengers and, according to police, was using his cellphone when the crash occurred. He was cited for careless driving and running a red light and paid $662 in fines and other costs.

Good believes the cellphone was to blame in the May 18, 2008, tragedy. "There's no question in my mind that there would have been no accident if he had not been on his cellphone," she says.

Now 24, Good expects to wear an ankle brace for the rest of her life. She had surgery last summer to recover some function in her limp left arm. Meanwhile, she's become an outspoken campaigner against distracted driving, lobbying lawmakers, appearing on the Oprah Winfrey Show, and addressing high school students. Her activism is in part a way to honor her mother and father's memory, Good says. "I know if the roles were switched, this is what my parents would be doing for me."

BILLY RAY SPENCE, 64
LUBBOCK, TEXAS


Billy Ray Spence

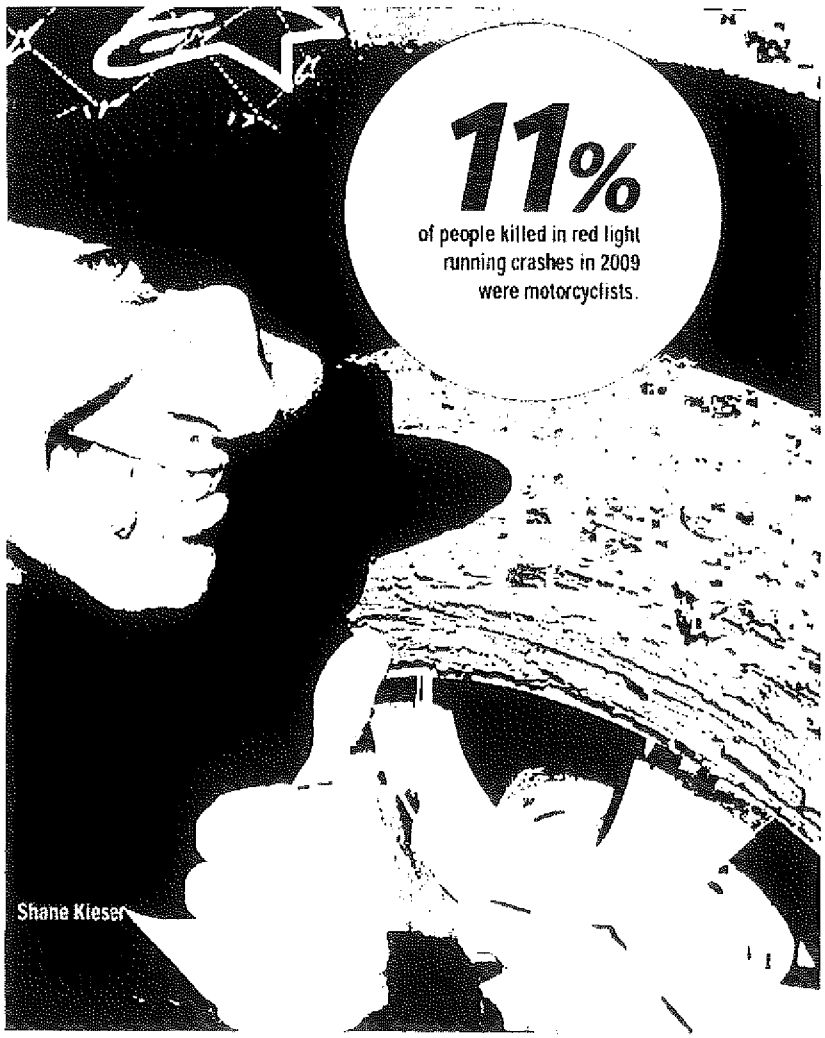
"What're you boys doin'?" That's what Billy Ray Spence, better known as Billy Kool, would say when he walked into a room. And when he did, you knew the party was about to get started. Spence, a heavy equipment operator who moonlighted as a bartender, was a captivating storyteller, jokester, poker player, and briefly married bachelor who lived just down the street from his elderly mother in Lubbock, Texas. He was killed at age 64 while running an errand on the afternoon of Nov. 11, 2008.

His red 1996 Jaguar XJ6 was broadsided by a Ford Explorer whose driver ran a red light. The driver of the Explorer, Marcelo Perez Jr., 35, was charged with manslaughter. Perez, who tested negative for alcohol and drugs, was no stranger to that intersection: He had been in another crash there just weeks earlier, leading to a charge against him of failing to stop and render aid. Perez died of an unrelated condition before either case could be resolved.

Sandra Johnson says her big brother went off to the Air Force in the 1960s as Billy Spence, but returned as Billy Kool. His name for everyone — or, at least, everyone he liked — was "Ace." Billy Kool's ability to tell a story made him the life of the party. Johnson says he could captivate an audience of grown men with a card trick or a story about three little bears.

Spence retired, but never stayed that way for long. "He would always say, 'I just want to be home with nothing on but the TV,'" Johnson recalls. "And then when he'd go back to work, he'd say, 'I felt like putting clothes on, so I went back to work.'"

SHANE KIESER, 19
LAS VEGAS, NEVADA



Shane Kieser

Shane Kieser loved wheels, and he loved adrenaline. When he wasn't racing at the BMX bicycle track, he was often doing stunts in the concrete bowl near his home in Las Vegas. His mother gave him his own insurance card in case she was at work the next time he landed on his face.

When Kieser got a motorcycle, his mother, Terri, wasn't thrilled but she took it in stride. Shane knew the risks and never rode without a helmet.

Early on the morning of Aug. 19, 2008, Kieser and his girlfriend headed to Walmart. They were night owls, says his mother, and "unfortunately, in Vegas everything is open at all hours of the day."

At 5:30 am, Kieser's 1994 Honda CBR slammed into a Toyota Corolla, killing him and injuring his girlfriend. The Corolla's driver wasn't hurt. Police say 3 witnesses saw the motorcycle go through a red light. Terri Kieser says that doesn't square with what she knows about her son.

"I was always the first to go, 'What did Shane do?'" she says with a laugh, before turning serious. "But I want to say no. No. Maybe a yellow that he felt he couldn't safely stop at. But running a red with his girlfriend on the back? Never. Shane would never be crazy with somebody else's life."

An aspiring mechanic, Shane was known for his goofy sense of humor. "Birthday parties — the candles were usually up his nose like a walrus," his mother says.

Every year on his birthday, Terri Kieser invites Shane's friends to a nearby mountain where he loved to ride his bike. She brings along homemade waffles — his favorite.

MARCUS MAY-COOK, 3

LANSING, MICHIGAN

Mindy Cook still can hear her little boy saying, "Mommy, I want you," the way he used to, his arms raised over his head so that she would scoop him up.

Marcus May-Cook was just 3 when he died on Aug. 10, 2008. Two days before, a 17-year-old unlicensed driver broadsided the car Marcus was riding in near his home in Lansing. Police determined that the teenage driver, Brianca Alexander, had gone through a red light. Marcus was asleep when it happened and never woke up.

"I see no end to this grief," Cook wrote in a letter she read at Alexander's sentencing hearing last September, more than 2 years after Marcus' death.

Alexander, who pleaded guilty to driving without a valid license, causing death, was sentenced to 2 ½ to 15 years in prison. Her mother received a year in jail with work release for allowing her daughter, who never had so much as a learner's permit, to take the car.

Marcus was an exuberant little boy who was convinced he would grow up to be Spider-Man. He wore a Spider-Man costume on Halloween — and kept wearing it long after the candy was gone. He even tried to climb the walls like the superhero, knocking over a shelf once in the process.

22%

of red light runners in fatal crashes in 2009 were driving without licenses.

Cook knows that Marcus would have been excited to start kindergarten this past fall. He often imagined heading to school just like big sister Makyla. When their mother packed Makyla's lunch, Marcus insisted on one to carry to his grandmother's house, where he stayed while his mom was at work.

On the Friday of the crash, Marcus and his sister were riding along as their aunt drove their grandmother to her part-time job. Their cousin was in the back seat with them.

Cook was at work when she got the call shortly before 5 pm. When she saw Marcus at the hospital, he didn't look injured, but his brain had been severely damaged. By Sunday, tests confirmed that nothing could save him.

Cook's mother, who was riding in front, had a fractured skull and other injuries. She is no longer able to work. Makyla, who was 6, was injured but recovered. She and her cousin were riding in boosters, while Marcus was buckled in a child restraint.

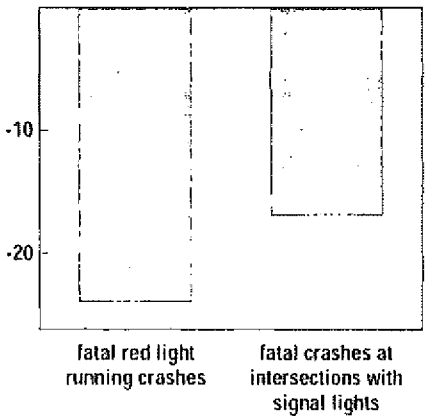
Cook now has another son and says 1-year-old Marrion has begun to recognize his brother in photographs.

"Marcus," says Cook, "is always talked about."

(continued from p. 2) over 200,000, the researchers compared those with red light camera programs to those without. Because they wanted to see how the rate of fatal crashes changed after the introduction of cameras, they compared two periods, 2004-08 and 1992-96. Cities that had cameras during 1992-96 were excluded from the analysis, as were cities that had cameras for only part of the later study period.

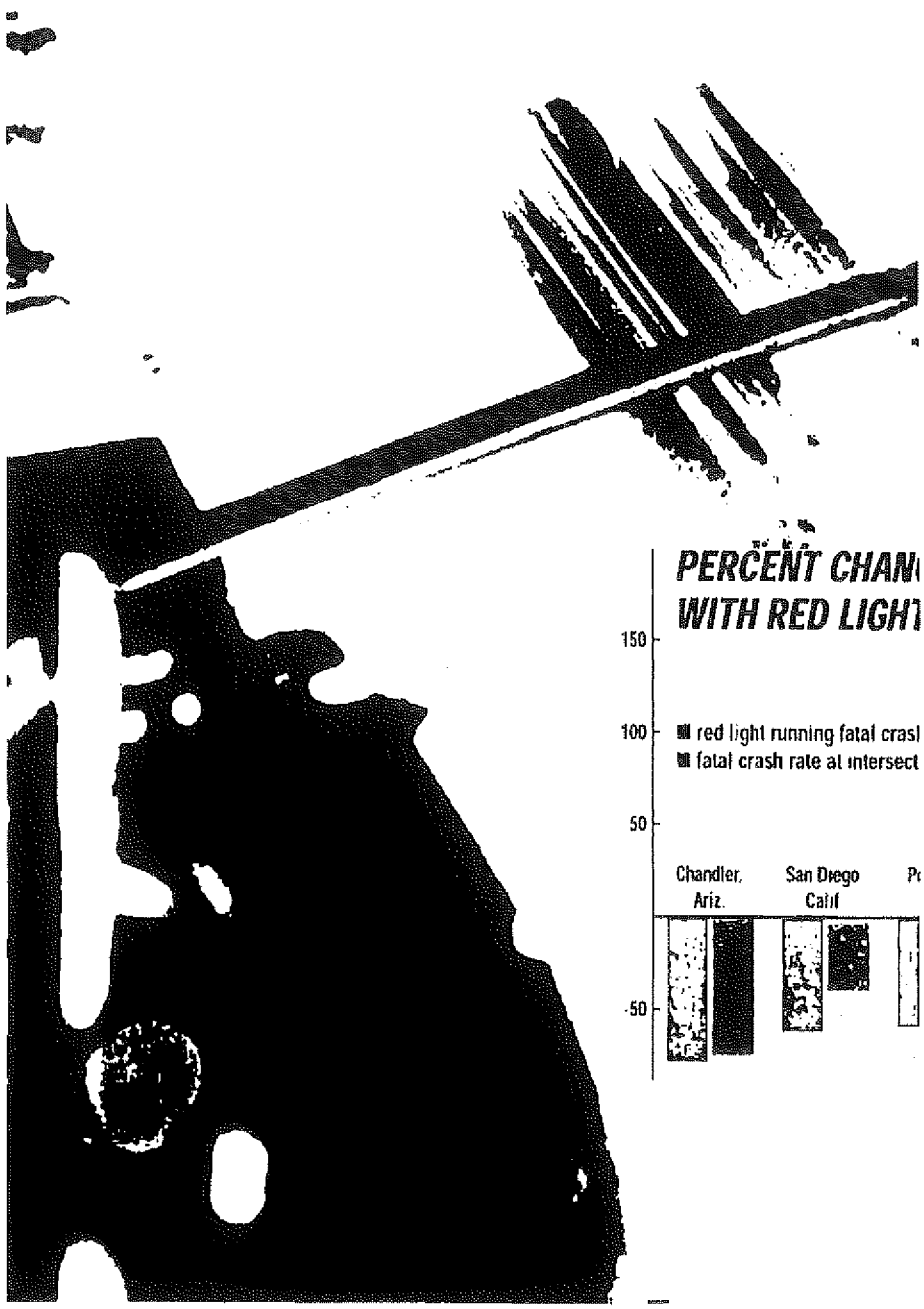
Researchers found that in the 14 cities that had cameras during 2004-08, the combined per capita rate of fatal red light running crashes fell 35 percent, compared with 1992-96. The rate also fell in the 48 cities without camera programs in either period, but only by 14 percent.

PERCENT DIFFERENCES IN ACTUAL CRASH RATES DURING 2004-08 IN CITIES WITH RED LIGHT CAMERAS VS. EXPECTED RATES WITHOUT CAMERAS



The rate of fatal red light running crashes in cities with cameras in 2004-08 was 24 percent lower than it would have been without cameras. That adds up to 74 fewer fatal red light running crashes or, given the average number of fatalities per red light running crash, approximately 83 lives saved.

That's a substantial benefit, but the actual benefit is even bigger. Red light cameras also reduce fatal intersection crashes that aren't attributed to red light running. One possible reason for this is that red light running fatalities are undercounted due to a lack of witnesses to explain what happened in a crash. Drivers also may be more cautious in general when they know cameras are around.

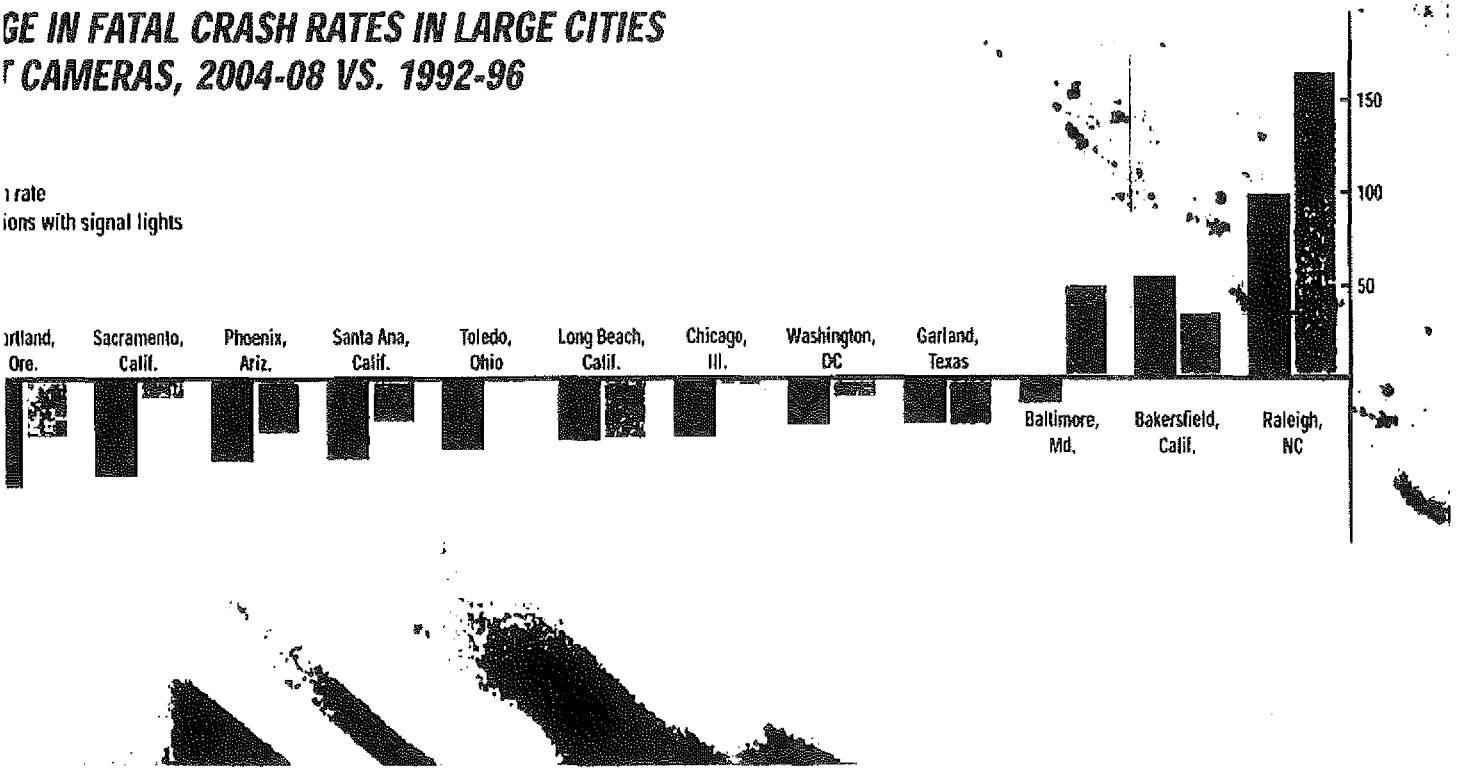


The rate of all fatal crashes at intersections with signals — not just red light running crashes — fell 14 percent in the camera cities and crept up 2 percent in the noncamera cities. In the camera cities, there were 17 percent fewer fatal crashes per capita at intersections with signals in 2004-08 than would have been expected. That translates into 159 people who are alive because of those automated enforcement programs.

If red light cameras had been in place for all 5 years in all 99 US cities with populations over 200,000, a total of 815 deaths could have been avoided.

"Examining a large group of cities over several years allowed us to take a close look

GE IN FATAL CRASH RATES IN LARGE CITIES
F CAMERAS, 2004-08 VS. 1992-96



at the most serious crashes, the ones that claim people's lives," says Anne McCartt, Institute senior vice president for research and a co-author of the study. "Our analysis shows that red light cameras are making intersections safer."

Results in each of the 14 camera cities varied. The biggest drop in the rate of fatal red light running crashes came in Chandler, Ariz., where the decline was 79 percent. Two cities, Raleigh, NC, and Bakersfield, Calif., experienced an increase.

"We don't know exactly why the data from Raleigh and Bakersfield didn't line up with what we found elsewhere," McCartt says. "Both cities have expanded geographically over the past two decades, and that probably has a lot to do with it."

A bigger mystery is why, in the face of mounting evidence that red light cameras make communities safer, some people continue to resist them. Rather than feeling angry at the sight of cameras going off, red light runners should thank their lucky stars they're alive to pay their tickets.

For a copy of "Effects of red light camera enforcement on fatal crashes in large US cities" by W. Hu et al., write: Insurance Institute for Highway Safety, 1005 N. Glebe Rd., Arlington, Va. 22201, or email publications@iihs.org.

CITY USES CAMERAS AS SAFETY TOOL, NOT MONEYMAKER

If the purpose of red light cameras is to raise cash from unsuspecting drivers, officials in Springfield, Mo., did everything wrong.

Before even switching on their cameras in June 2007, traffic engineers reduced red light running by changing the length of yellow lights to make signals consistent across the city. The launch of the cameras was preceded by a major education campaign urging drivers to "respect red," and once cameras were installed their locations were clearly marked. Officials put the cameras at intersections with the biggest traffic volumes to get the message to the greatest number of drivers, though those intersections weren't necessarily where the most violations occurred.

So what happened with that easy money for the budget? Two years and eight months after the cameras were switched on, the program was $33,000 in the red.

Fortunately for the city, making money was never the goal. Improving safety was, and by that measure, the cameras were a success. City officials say their data show red light running crashes decreased both at camera-equipped intersections and citywide. Citations fell 36 percent to an average of 1.05 a day per camera.

Springfield traffic engineer Jason Haynes says the fact that the program didn't make money helped to maintain community support. Another plus was that the vendor operating Springfield's cameras had no vested interest in busting drivers. Instead of paying the company per violation, Springfield paid a flat fee for each camera.

The biggest key to the program's success, says Earl Newman, who recently retired as Springfield's assistant director of public works, is that the city first did all it could from a traffic engineering standpoint to reduce red light running. That meant fixing the yellow timing problem, which the city discovered as it was preparing to install the cameras. The problem stemmed from the fact that some intersections were controlled by the state and others by the city, and the state signals had longer yellow times. There was rampant red light running at the city intersections, perhaps because drivers used to state roads weren't expecting the lights to change so quickly.

Springfield and the state transportation department worked out a compromise, lengthening the yellow phase at many signals and shortening it slightly at others. Only after giving drivers months to get used to the new times did the city switch on the cameras, which led to a further reduction in red light running.

City surveys showed high support for red light cameras, but the program had determined opponents. A legal challenge brought the program to a halt last March, when the Missouri Supreme Court ruled that Springfield's administrative hearing process for contested citations was inadequate.

Haynes says the city's lawyers have come up with a fix and that a new contract for cameras is in the works. But Newman says he's not sure whether the program has much of a future now that violations have fallen so low. Too few citations could mean the red light cameras won't pay for themselves.

"Money is the issue here whether we like it or not," he says. People don't want the cameras to make money, but "as soon as it comes to the point of the taxpayers paying for it, it's a problem again."

HOW RED LIGHT CAMERAS WORK

Cameras like the one at right automatically photograph vehicles whose drivers run red lights. The cameras are connected to the traffic signal and to sensors that monitor traffic flow just before the crosswalk or stop line. The system continuously monitors the traffic signal, and the camera captures any vehicle that doesn't stop during the red phase. Depending on the particular technology, a series of photographs and/or a video clip shows the red light violator prior to entering the intersection on a red signal, as well as the vehicle's progression through the intersection. Tickets typically are mailed to owners of violating vehicles, based on a review of photographic evidence.

QUESTIONS AND ANSWERS ABOUT RED LIGHT CAMERAS

Do red light cameras violate privacy?

No. Driving is a regulated activity on public roads. By obtaining a license, a motorist agrees to abide by certain rules, such as to obey traffic signals. Neither the law nor common sense suggests drivers should not be observed on the road or have their violations documented. Red light camera systems can be designed to photograph only a vehicle's rear license plate, not vehicle occupants, although in some places the law requires a photograph of the driver.

Aren't longer yellow times more effective?

Providing adequate yellow time and a brief phase when all signals are red is important and can reduce crashes but doesn't eliminate the need for, or potential benefits of, red light cameras. An Institute study conducted in Philadelphia, Pa., evaluated effects on red light running of first lengthening yellow signal timing by about a second and then introducing red light cameras. While the longer yellow reduced red light violations by 36 percent, adding camera enforcement further cut red light running another 96 percent.

Do cameras raise the risk of rear-enders?

Some studies have reported that while red light cameras reduce front-into-side collisions and overall injury crashes, they can increase rear-end crashes. However, rear-end crashes tend to be much less severe than front-into-side crashes, so the net effect is positive. Moreover, not all studies that have examined rear-end collisions have found an increase.

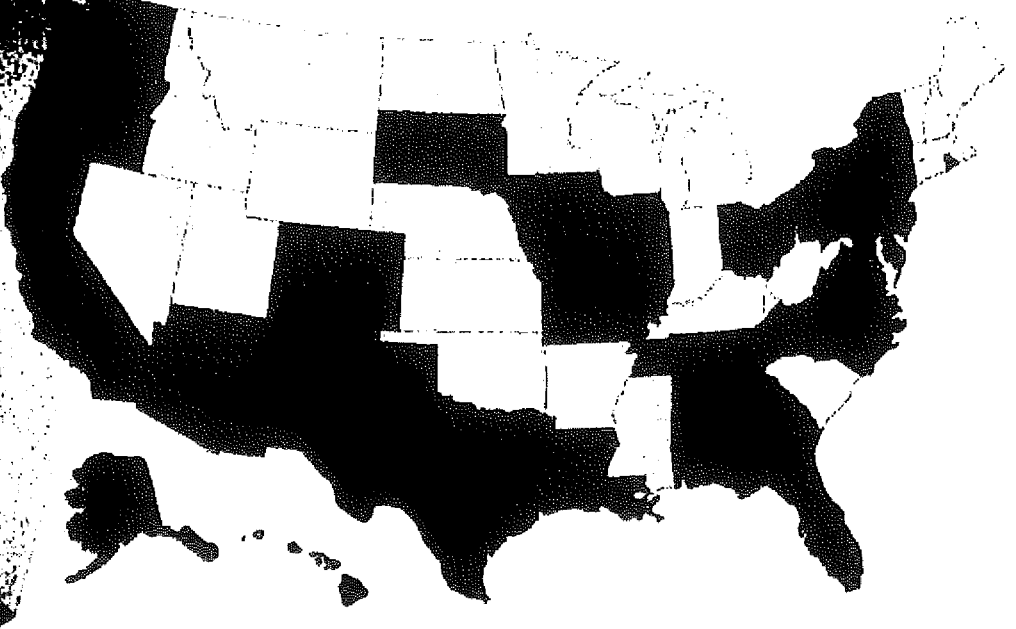
Are special laws needed for cameras?

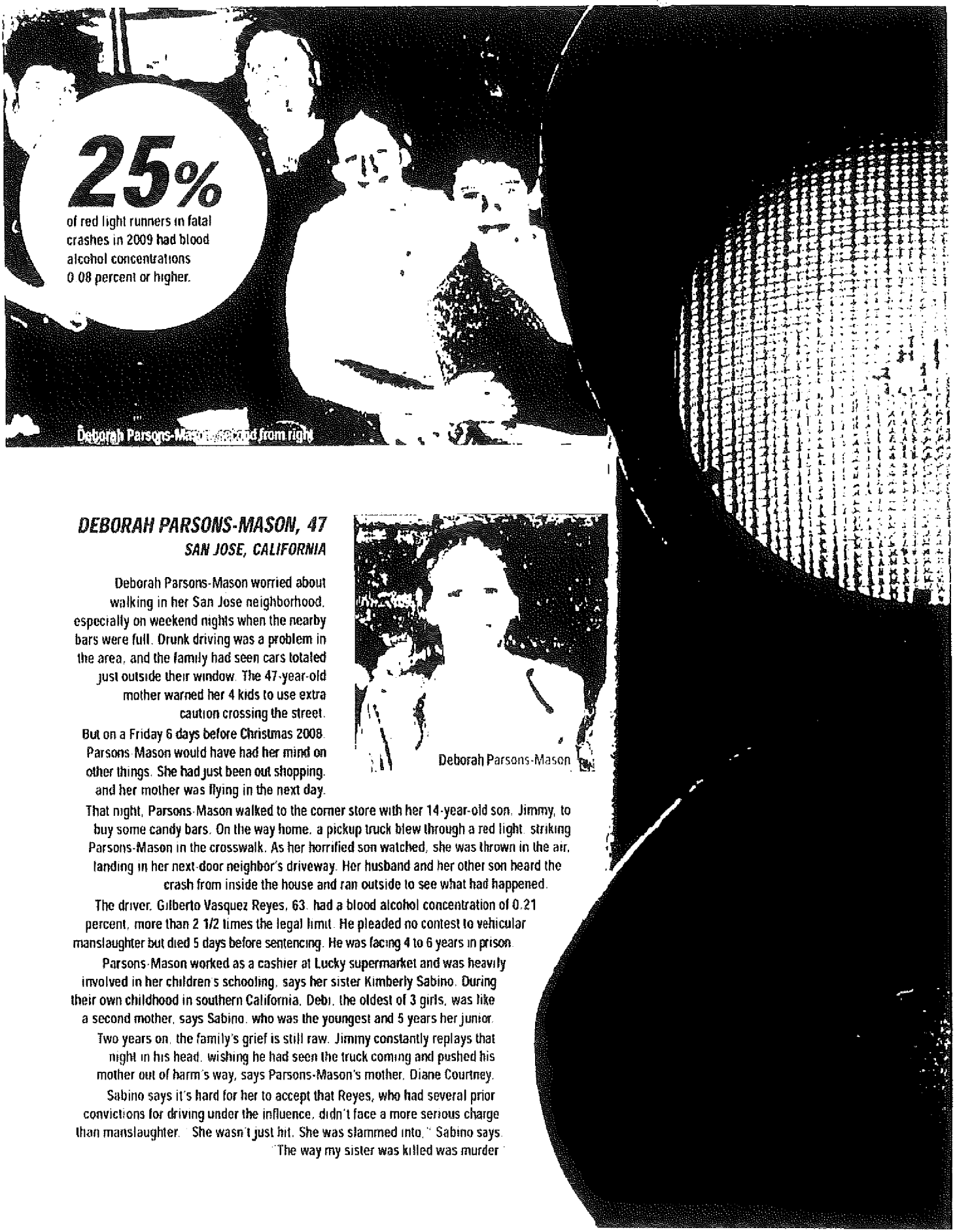
Before cameras may be used, state or local laws must authorize enforcement agencies to cite red light violators by mail. The legislation makes the vehicle owner responsible for the ticket. In most cases, this involves establishing a presumption that the registered owner is the vehicle driver at the time of the offense and providing a mechanism for vehicle owners to inform authorities if someone else was driving.

Another option is to treat violations captured by red light cameras as the equivalent of parking tickets. If, as in New York, camera violations are treated like parking citations, the law can make registered vehicle owners responsible without regard to who was driving. The cameras are authorized in about half of US states.

For more questions and answers go to iihs.org/research/qanda/rlr.html.

STATES WHERE RED LIGHT CAMERAS ARE IN USE





25%
of red light runners in fatal crashes in 2009 had blood alcohol concentrations 0.08 percent or higher.

Deborah Parsons-Mason [illegible] from right

DEBORAH PARSONS-MASON, 47
SAN JOSE, CALIFORNIA

Deborah Parsons-Mason

Deborah Parsons-Mason worried about walking in her San Jose neighborhood, especially on weekend nights when the nearby bars were full. Drunk driving was a problem in the area, and the family had seen cars totaled just outside their window. The 47-year-old mother warned her 4 kids to use extra caution crossing the street.

But on a Friday 6 days before Christmas 2008, Parsons-Mason would have had her mind on other things. She had just been out shopping, and her mother was flying in the next day.

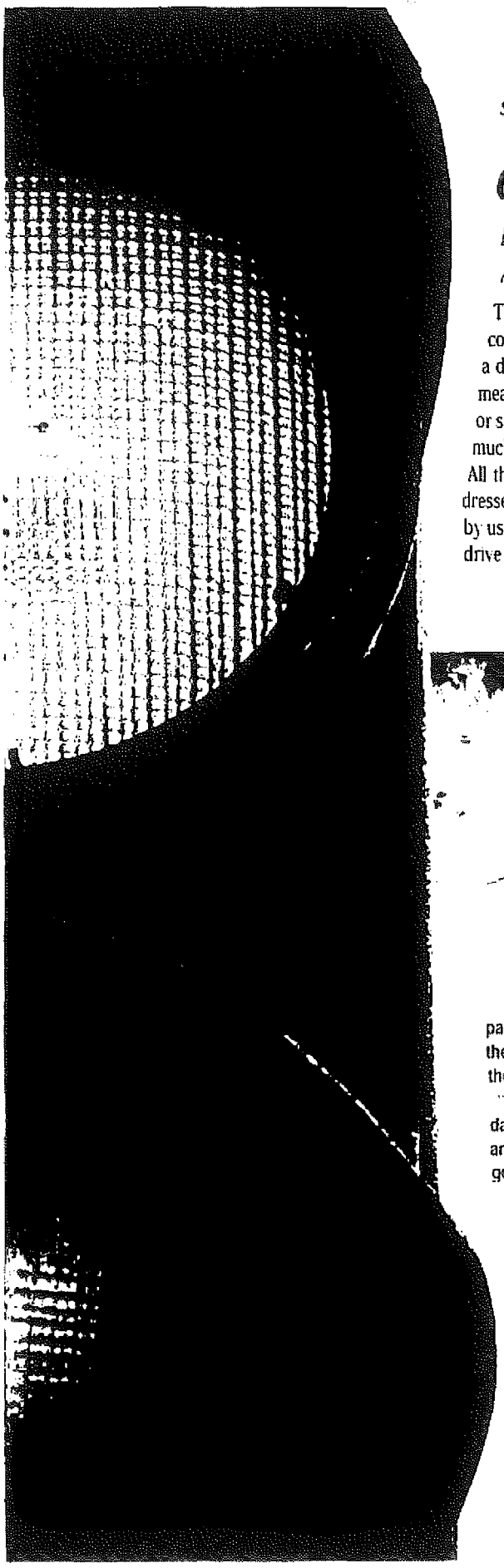
That night, Parsons-Mason walked to the corner store with her 14-year-old son, Jimmy, to buy some candy bars. On the way home, a pickup truck blew through a red light, striking Parsons-Mason in the crosswalk. As her horrified son watched, she was thrown in the air, landing in her next-door neighbor's driveway. Her husband and her other son heard the crash from inside the house and ran outside to see what had happened.

The driver, Gilberto Vasquez Reyes, 63, had a blood alcohol concentration of 0.21 percent, more than 2 1/2 times the legal limit. He pleaded no contest to vehicular manslaughter but died 5 days before sentencing. He was facing 4 to 6 years in prison.

Parsons-Mason worked as a cashier at Lucky supermarket and was heavily involved in her children's schooling, says her sister Kimberly Sabino. During their own childhood in southern California, Debi, the oldest of 3 girls, was like a second mother, says Sabino, who was the youngest and 5 years her junior.

Two years on, the family's grief is still raw. Jimmy constantly replays that night in his head, wishing he had seen the truck coming and pushed his mother out of harm's way, says Parsons-Mason's mother, Diane Courtney.

Sabino says it's hard for her to accept that Reyes, who had several prior convictions for driving under the influence, didn't face a more serious charge than manslaughter. "She wasn't just hit. She was slammed into," Sabino says. "The way my sister was killed was murder."



COMMON THREAD BINDS CRASHES DESPITE DIFFERENT STORY LINES

A comment by Institute president Adrian Lund

The fatal crashes described on these pages are all different, but they have one thing in common. Someone ran a red light. The circumstances of a particular crash may point to a deeper cause, so it's tempting to seek a deeper solution. After all, we know that red means stop. We learned that long before we learned to drive. If people disobey red lights, or simply fail to see them, we assume there's a reason. It must be because they drank too much or they're fiddling with their cellphones or they're inexperienced or reckless drivers. All those things may be true, and many of the underlying causes can and should be addressed. But we can prevent many red light running crashes, regardless of the circumstances, by using cameras to enforce the law. The fact is that the threat of a ticket makes everyone drive more carefully. The data prove it.

AMBER CORNETT, 16

BETHEL TOWNSHIP, OHIO

On Nov. 22, 2008, Amber Cornett dutifully called her parents to tell them she was on her way home after spending the night at a friend's house and going out for breakfast.

Cornett was belted in the front seat when the 2003 Chevrolet Cavalier her friend was driving was broadsided by a pickup truck at an intersection in rural Bethel Township in Clark County, Ohio. She was killed just 6 days before her 17th birthday.

Cornett's friend told police she thought she had a green light. The driver and the passenger of the other vehicle insisted their light was green. A third girl who was in the Cavalier's back seat and was injured in the crash couldn't recall approaching the intersection. Police were unable to determine fault and didn't file charges.

"All we really got was no answers," says Mack Cornett, Amber's father. The daughter he lost was "every parent's dream," Cornett says. She was a good student and made friends easily. "I know she was looking forward to getting the chance to get out on her own."

On tribute pages on the web, friends remember Amber's effervescent personality. They lament that she'll never meet their new boyfriends and confide that they can't bear to delete her number from their cellphones.

Mack Cornett has his own way of remembering: The 46-year-old machinist manager keeps in his Bible a picture of Amber with a big smile, taken the summer before she died. Cornett says he's disappointed that neither driver has reached out to say they're sorry. He would be inclined to forgive.

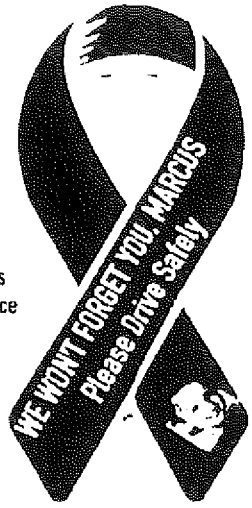
"People run lights. I don't think the majority of people who run them mean to run them. They have distractions," he says.

"How many times have you done something and you got away with it? You look down, you look at your watch, you turn the knob on the stereo, you laugh at a joke — you miss the light."

STATUS REPORT

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

1005 N. Glebe Rd., Arlington, VA 22201
Phone 703/247-1500 Fax 247-1588
Internet: www.iihs.org
Vol. 46, No. 1, Feb. 1, 2011



One family's remembrance

The Insurance Institute for Highway Safety is a nonprofit scientific and educational organization dedicated to reducing deaths, injuries, and property damage from crashes on the nation's highways. The Institute is wholly supported by auto insurers:

AAA Mid-Atlantic Insurance Group
AAA Northern California, Nevada, and Utah
ACE Private Risk Services
Affirmative Insurance
Agency Insurance Company of Maryland
Alfa Alliance Insurance Corporation
Alfa Insurance
Allstate Insurance Group
American Family Mutual Insurance
American National Property and Casualty Company
Ameriprise Auto & Home
Amica Mutual Insurance Company
Auto Club Enterprises
Auto Club Group
Bituminous Insurance Companies
California Casualty Group
Capital Insurance Group
Chubb & Son
Colorado Farm Bureau Mutual Insurance Company
Concord Group Insurance Companies
Cotton States Insurance
COUNTRY Financial
Direct General Corporation
Discovery Insurance Company
Erie Insurance Group
Esurance
Farm Bureau Financial Services
Farm Bureau Insurance of Michigan
Farm Bureau Mutual Insurance Company of Idaho
Farmers Insurance Group of Companies
Farmers Mutual of Nebraska
Firemen's Fund Insurance Company
First Acceptance Corporation
Florida Farm Bureau Insurance Companies
Frankenmuth Insurance
Gainsco Insurance
GEICO Group
Georgia Farm Bureau Mutual Insurance Company
GMAC Personal Lines Insurance
Grange Insurance
Hanover Insurance Group
The Hartford
Haulers Insurance Company, Inc.
High Point Insurance Group
Homeowners of America Insurance Company
Horace Mann Insurance Companies
ICW Group
Imperial Fire & Casualty Insurance Company
Infinity Property & Casualty
Kemper, A Unitrin Business
Kentucky Farm Bureau Insurance
Liberty Mutual Insurance Company
Louisiana Farm Bureau Mutual Insurance Company
Mercury Insurance Group
MetLife Auto & Home
MiddleOak
Mississippi Farm Bureau Casualty Insurance Company
MMG Insurance
Mutual of Enumclaw Insurance Company
Nationwide
New Jersey Manufacturers Insurance Group
NLC Insurance Companies, Inc.
Nodak Mutual Insurance Company
Norfolk & Dedham Group
North Carolina Farm Bureau Mutual Insurance Company
Oklahoma Farm Bureau Mutual Insurance Company
Old American County Mutual Fire Insurance
Oregon Mutual Insurance
Palisades Insurance
Pekin Insurance
PEMCO Insurance
Progressive Corporation
Rockingham Group
Safeco Insurance
Samsung Fire & Marine Insurance Company
SECURA Insurance
Sentry Insurance
Shelter Insurance
Sompo Japan Insurance Company of America
South Carolina Farm Bureau Mutual Insurance Company
Southern Farm Bureau Casualty Insurance Company
State Auto Insurance Companies
State Farm
Tennessee Farmers Mutual Insurance Company
Texas Farm Bureau Insurance Companies
Tokio Marine Nichido
The Travelers Companies
United Educators
Unitrin
USAA
Viceroy Insurance Company
Virginia Farm Bureau Mutual Insurance
West Bend Mutual Insurance Company
Young America Insurance Company
Zurich North America

FUNDING ASSOCIATIONS
American Insurance Association
National Association of Mutual Insurance Companies
Property Casualty Insurers Association of America

NATIONAL MOTORISTS ASSOCIATION
Advocating, Representing, and Protecting the Interests of North American Motorists

608/849/6000
Fax: 608/849/8697
E-mail: nma@motorists.org
Web site: www.motorists.org

November 5, 2010

Re: *SAFER STREETS IN LOS ANGELES: Why Engineering Countermeasures Are More Effective Than Photo Enforcement in Reducing Red-Light Related Crashes* by Jay Beeber, Safer Streets L.A.

To Whom It May Concern,

I have carefully studied the subject report by Mr. Beeber and agree completely with the conclusion that engineering countermeasures are the most effective solution – both from a design and a cost standpoint – toward improving intersection safety.

Fifteen states, and several communities outside of those states, recognize this and have banned red-light cameras, a technology that has been proven to cause increased accident rates and has shown no preventative value with regard to serious angle crashes. Red-light cameras do, however, generate large sums of revenue from area commuters. Mr. Beeber's well-documented study goes beyond the typical revenue vs. safety debate and clearly shows that design solutions such as longer yellow light intervals and higher visibility traffic signals are superior in making intersections safer for drivers, cyclists, and pedestrians.

Sincerely,

Gary Biller
Executive Director

April 18, 2011

TO: The Honorable Board of Police Commissioners

FROM: Jay Beeber, California Motorists Association, Safer Streets L.A.

SUBJECT: LAPD ANALYSIS OF JAY BEEBER'S REPORT ENTITLED SAFER STREETS INLOS ANGELES: WHY ENGINEERING COUNTERMEASURES ARE MORE EFFECTIVE THAN PHOTO ENFORCEMENT IN REDUCING RED LIGHT RELATED CRASHES (CITY COUNCIL MOTION 11-0125)

At the Police Commission meeting on April 19, 2011, the LAPD will present Report BPC #11-0158, relative to City Council Motion 11-0125 (Perry, Zine) requesting the Los Angeles Department of Transportation (LADOT), with the assistance of the Los Angeles Police Department (LAPD) and the Chief Legislative Analyst, to conduct an analysis of Jay Beeber's Report entitled "Safer Streets in Los Angeles: Why Engineering Countermeasures are More Effective than Photo Enforcement in Reducing Red Light Related Crashes".

This report is in response to the LAPD report.

BACKGROUND

On January 26, 2011, Councilmembers Jan Perry and Dennis Zine introduced a motion (Council File {CF} No. 11-0125) requesting the Los Angeles Department of Transportation (LADOT), with the assistance of the Los Angeles Police Department (LAPD) and the Chief Legislative Analyst, to conduct an analysis of Jay Beeber's Report entitled "Safer Streets in Los Angeles: Why Engineering Countermeasures are More Effective Than Photo Enforcement in Reducing Red Light Related Crashes".

On or about March 24, 2011 the LAPD submitted Report BPC #11-0121, dated March 21, 2011, in response. On March 26, we alerted the Board of Police Commissioners that the department had responded to the wrong report. The department subsequently withdrew Report BPC #11-0121 and was directed to report back to the Board of Police Commissioners by April 12, 2011 with a response to the report referenced in Council Motion 11-0125. On April 14, 2011, the department submitted Report BPC #11-0158 in response.

THE REPORT'S AUTHORS

The California Motorists Association and Safer Streets L.A. are grassroots organizations dedicated to furthering the interests of the motoring public through the adoption of scientifically sound and sensible transportation and traffic laws. Safer Streets L.A. focuses on matters affecting the Los Angeles area while the California Motorists Association concentrates its efforts at the state level. There is often some overlap between the two groups. We believe that accurate information and critical thinking are crucial to implementing sound public policy. Towards that end, we strive to provide the public and our elected representatives with well researched and verifiable data. Our goal

is to counter long-held misconceptions and misinformation with solid facts in order to promote scientifically based solutions to motorist and pedestrian safety issues.

We wish to emphasize that while we are critical of the City of Los Angeles' Red-Light Camera Program, we are strong supporters of the LAPD in general. The police department regularly provides outstanding service to the citizens of Los Angeles and we wholeheartedly support their efforts in a number of areas. Recently, our report for the Sherman Oaks Neighborhood Council on potential countermeasures for improved pedestrian safety throughout the city won high praise from Captain Ivan Minsal of the Valley Traffic Division, as well as the LADOT and Councilmember Paul Krekorian.

GENERAL COMMENTS ON THE LAPD RESPONSE

According to the LAPD's response, Council Motion 11-0125 raised one area of concern:

> Are the City's Photo Red Light intersections the most efficient and cost effective in reducing overall serious injury and fatal traffic collisions from red light violations?

Although the response spends a great deal of time defending current LADOT practices at PRL intersections, the report fails to address this central question. The premise of the "Engineering Countermeasures" report is that at signalized intersections, photo enforcement is a less effective means of improving safety than providing a properly engineered intersection which includes sufficient yellow and all-red signal phases (and possibly a protected left turn phase among other engineering remedies). Stated another way, once a problem intersection is treated with the proper engineering countermeasures, red-light cameras should become unnecessary. In a phone conversation on November 9, 2010, we posed this assertion to John Fisher, Assistant General Manager of the LADOT. His response was, "I would generally agree with that". Regardless of whether or not Mr. Fisher or his staff currently stands by that response, numerous other qualified traffic engineers along with a preponderance of the available scientific evidence indicates that it is true. Attached to this report as Appendix A, is a copy of the testimony of Matt Gauntt, P.E. to the Illinois Senate. Mr. Gauntt is a traffic engineer with over 20 years experience in the field and author of numerous scientific studies on the subject. In his testimony, he states:

> After reviewing the technical literature and examining the advent of red light running cameras for myself, it is my opinion that the use of red light running cameras will not improve traffic safety and may very well result in a decrease in safety to the motoring public. At best, the evidence points to no significant improvement to safety based on their use. Instead of utilizing red light running cameras, there are numerous solutions (referring to the engineering countermeasures he discusses earlier in his testimony such as longer yellow timing) that will have a far greater likelihood of improving traffic safety.

Our criticism to the approach being taken to intersection safety improvements in the City of Los Angeles is that the decision to use red-light cameras, has been and is, the first step in the process. In contrast, the prevailing opinion of experts in the field of traffic safety is

that engineering countermeasures should first be implemented and evaluated prior to the consideration of photo enforcement. When the current PRL program was implemented, some engineering countermeasures were employed, but their success in improving intersection safety was not evaluated prior to the installation of the cameras. This is totally nonsensical. Safety seems to have improved at PRL intersections and this is most likely due to the lengthening of the yellow signal time and implementation of an all-red phase*. Unfortunately, we will never be 100% sure because photo enforcement was instituted at the same time. However, the available evidence which we presented in great detail in our previous report submitted to commission members entitled "*Response to LAPD Response to City Controller's Audit*" (excerpted in Appendix B) strongly suggests that red-light cameras cannot be credited with improving intersection safety in Los Angeles.

In the balance of this response, we follow the format of the LAPD response. Text from the LAPD response appears in bold italics. Our response follows.

DISCUSSION

In November 2010 and March 2011, Jay Beeber of the California Motorists Association and the Freedom Minute website...

While not material to the discussion at hand, it should be noted that while the Freedom Minute website is run by the author of the report being discussed, it is a wholly separate project and has nothing whatsoever to do with the "Engineering Countermeasures" report and is not referenced in any of the material submitted to the City Council, LADOT, or LAPD on this issue. It is unknown why the LAPD felt the need to reference that entity here in this response.

...released a report that indicates that the City has not appropriately incorporated effective countermeasures at its Photo Red Light (PRL) intersections.

This statement shows a fundamental misunderstanding of the nature of the "Engineering Countermeasures" report. The report does not indicate *"that the City has not appropriately incorporated effective countermeasures at its Photo Red Light (PRL) intersections"*. On the contrary, the report specifically states that the engineering countermeasures employed by the LADOT at PRL intersections when the cameras were installed (which included lengthening the yellow signal interval and adding an all-red signal phase) did increase safety. In fact, we maintain that this is the main reason that these intersections have experienced a decrease in red-light related collisions. The report does explain how and why a further lengthening of the yellow and all-red phases might be necessary at intersections where red-light running accidents continue to be over represented, but that is far different than the above statement made in the LAPD response.

---

*Some additional lengthening of the yellow time may be warranted to eliminate residual unintentional violations, especially were red-light cameras are being employed.

This point was discussed at length during our meeting on March 31st where we again expressed that it was the signal timing changes made by DOT and not the red-light cameras that were responsible for any safety improvements seen at PRL intersections. This seemed to be a point of agreement as Sgt. MacWillie responded, "Yes, it was the signal changes, not the cameras". This issue was further clarified in a follow-up email to the two DOT representatives that attended that meeting, wherein I again made it clear that *"the 'Safer Streets' report was (not) a criticism of the LADOT (current practices at PRL intersections) but rather... a general explanation of the types of countermeasures that might be possible as a cost effective alternative to photo enforcement"*.

The "Engineering Countermeasures" report was prompted by the current approach being undertaken by the City in which the RFP process is being pursued prior to the implementation and evaluation of proper engineering countermeasures at signalized intersections where red-light related collisions are over represented. As such, it offers guidelines for future public policy regarding improving intersection safety, not a criticism of the effectiveness of current engineering countermeasures at PRL intersections.

The report claimed that 95 percent of red light violations occur within the first two seconds and that 80 percent of violations occur during the first second after the light has changed to red. The report further claimed that late into red violations only account for five percent of red light running.

This is not simply a "claim" but rather a fully documented description of the findings from a Texas Transportation Institute study conducted by highly qualified transportation researcher engineers. To call it a "claim" is to minimize its importance within the "Engineering Countermeasures" report and to denigrate the work of the Texas research scientists. Furthermore, understanding that the vast majority of red-light running occurs very early in the red cycle is critical to understanding how engineering countermeasures such as longer yellows and all-red phases can reduce or eliminate accidents at signalized intersections.

ANALYSIS

Mr. Beeber claims that yellow signal timing should be increased by up to one second beyond the minimum recommended time, and that the minimum should be based on the 85th percentile, rather than the posted speed limit.

The purpose of the yellow signal phase is to alert drivers that their right-of-way is about to end and, depending upon their relative proximity to the intersection, to permit them to come to a safe stop or allow them time to clear the limit line prior to the onset of the red phase. Therefore, in setting the proper yellow time, the actual speed of traffic must be used if the goal is to permit safe stopping or safe clearance of the limit line without violating the red. This is simply common sense. For decades, the standard that has been used for the actual speed of vehicles upon a roadway is the 85th percentile speed of free flow traffic. This is why the Institute of Transportation Engineers (ITE), not just Mr. Beeber, recommends using the 85th percentile speed of free flow traffic in their kinematic formula to calculate the minimum yellow time. As will be seen from a further discussion of this topic below, the California MUTCD also requires that the 85th percentile be used

to set the minimum yellow signal time because the 85th percentile and the posted speed limit are supposed to be one and the same.

As far as the recommendation to set the yellow time above this minimum, numerous studies have shown a safety benefit to increasing the yellow time slightly beyond the minimum. The "Engineering Countermeasures" report fully documents these studies with charts, graphs and references to the actual studies. It is unnecessary to duplicate that documentation here. It should be noted, however, that the recommendation contained in the "Engineering Countermeasures" report is for an increase *up to* one second and that recommendation is only necessary when the yellow phase based on the 85th percentile is insufficient to reduce violations or collisions to acceptable levels. In most cases, setting the yellow time at the 85th percentile should be adequate. As can be seen, this recommendation is entirely within accepted, even preferred, engineering practices.

In California, jurisdictions are legally required to operate traffic control devices according to the standards established by the California Manual of Uniform Traffic Control Devices (MUTCD).

Keep in mind that this is a legal requirement for the *absolute minimum*. Nothing prevents a jurisdiction from going beyond this minimum in order to improve safety when necessary. In fact, the legislature felt it so important to point out that jurisdictions may exceed this minimum that they included the following in section 21455.7 (c) of the vehicle code: *"A yellow light change interval may exceed the minimum interval established pursuant to subdivision (a)"*. (Subdivision (a) establishes the minimum duration of the yellow signal at intersections equipped with photo enforcement.)

Clearly the LADOT understands that this minimum may be exceeded since it is their standard to exceed what they understand to be the minimum by .3 seconds at PRL intersections. As we have stated numerous times, this a commendable practice but may be insufficient when there remains significant red-light related collisions at the intersection or when a red-light camera is present generating high numbers of citations due to the "spread" between the DOT's current timing practices and what the light would be timed at using the true 85th percentile speed.

Hence, the minimum yellow change interval shall be set in accordance with the posted speed limit.

This requirement does not exist in a vacuum. Using the posted speed limit for signal timing is only valid if *all* the MUTCD standards are met which, when taken together, would require that the posted speed limit be set at the 85th percentile speed (with one exception*).

---

*The MUTCD allows the posted speed limit to be reduced by 5 mph in limited circumstances based upon engineering judgment. This does not, however, change the actual 85th percentile speed. In these situations, using the actual 85th percentile speed (rather than the posted speed) in calculating the minimum yellow time would be necessary to ensure that motorists are presented with a sufficient yellow signal time.

Section 2B.13 on Page 2B-7 of the California 2010 MUTCD reads:

> "When a speed limit is to be posted, it **shall** be established at the nearest 10 km/h (5 mph) increment of the 85th-percentile speed of **free-flowing** traffic.

Page 278 from the Institute of Transportation Engineers Handbook states:

> "The definition of a free-flowing vehicle is one that is trailing the previous vehicle in the same lane by 3 seconds or more."

Therefore, the MUTCD standard for signal timing is only met when the posted speed limit is set at the 85th-percentile speed of free-flowing traffic. Unfortunately, this is rarely the case in Los Angeles. In many instances, especially on the types of roadways that are most often considered for photo enforcement, the 85th-percentile speed of free-flowing traffic exceeds the posted speed limit by 5 - 15 mph.

The following examples taken from City Council file records of speed surveys recently performed by the LADOT illustrate this point:

Chatsworth Drive between Golden State Freeway (5) and Chatsworth Street
Posted – 35 mph, Survey – 45 mph 3/2010

Paxton Street between Arleta Avenue and Foothill Boulevard
Posted – 30 mph, Survey – 40 mph 3/2010 (39 to 42 mph) 7/2009

Polk Street between Glenoaks Boulevard and San Fernando Road
Posted – 35 mph, Survey – 42 mph (between 40 and 44 mph) 11/08

Chandler Boulevard between Lankershim Boulevard and Coldwater' Canyon Avenue
Posted – 35 mph, Survey – 45 mph 2/2009

Hollywood Way between Glenoaks Boulevard and Burbank City Limit
Posted – 35 mph, Survey – 44 mph 8/2006

Burbank Boulevard between Clybourn Avenue and San Diego Freeway
Posted – 35 mph, Survey – 42 mph (between 39 and 45 mph) 8/2009

Laurel Canyon Boulevard between Chatsworth Drive and Osborne Street
Posted – 35 mph, Survey – 41.3 mph (between 39 and 43 mph)

Laurel Canyon Boulevard between Osborne Street and Sheldon Street
Posted – 35 mph, Survey – 44.8 mph (between 43 and 47 mph) 9/2009

Laurel Canyon Boulevard from Sheldon Street to Riverside Drive
Posted – 35 mph, Survey – 39.6 mph (between 37 and 41 mph)

Balboa Boulevard between Foothill Boulevard and Midwood Drive
Posted – 40 mph, Survey – 49 mph (between 48 and 52 mph) 2/2008

At PRL intersections, LADOT implemented the yellow time interval using a speed value that is five miles per hour higher than the posted speed limit. Hence, the yellow time interval used in the City exceeds the California MUTCD's standard for minimum yellow change interval.

First, keep in mind that while the practice described here may be true for the 32 PRL intersections, it may not (and often is not) true for the thousands of other signalized intersections in the City of Los Angeles. Some of those intersections may have an elevated accident rate which might prompt the LAPD to consider photo enforcement. However, an inexpensive yellow timing change (along with a sufficient all-red phase) would likely alleviate the problem.

Second, a response to the claim about exceeding the MUTCD standard is covered extensively in the "Engineering Countermeasures" report, yet rather than respond to that, the LAPD report ignores it completely and simply reiterates the same argument that was refuted. Therefore, we will once again attempt to explain the inherent flaw in the above claim.

---- Where the 85th-percentile speed of free-flowing traffic is more than 5 mph higher than the posted speed limit, the current LADOT practice of using the posted speed plus 5 mph (posted +5) to set the yellow time not only *fails to exceed* the MUTCD minimum requirements, it *fails to meet* them. --------

Perhaps a real-world example will best illustrate this point. The PRL enforced intersection of Sherman Way and Louise has the highest number of straight through red light violations of any of the 32 PRL intersections. The posted speed limit on Sherman Way (the camera monitored approach) is 35 mph. The LADOT has set the yellow signal at 3.9 seconds using the posted +5 formula. However, the actual 85th percentile speed of free flow traffic measured on March 27, 2011 is 48 mph. That 85th percentile speed would require a yellow signal time of 4.5 seconds, more than half a second longer than the current timing. If the posted speed limit were changed to 45 mph to comply with the requirements in the MUTCD and the DOT practice of using the posted speed plus 5 mph employed, the yellow time would be set at 4.7 seconds. This would likely eliminate the vast majority of violations at this intersection.

What's worse, the DOT has been aware of the discrepancy between the posted speed limit and the 85th percentile speed at this location and has not adjusted the speed limit or, more importantly, the signal timing. In May of 2008, LADOT performed a speed survey at this location and measured an 85th percentile speed of 40 mph. Had the posted speed limit been changed and, as a result, the signal timing adjusted using the stated DOT practice of posted +5, the yellow signal timing would have been adjusted upwards to 4.3 seconds. Undoubtedly, violations would have decreased due to this timing change. Yet for the past 3 years, the City has been issuing citations based on a yellow signal time they know is not in compliance with their own practices.

Generally, the actual approach speeds are reflected by the measured 85th percentile speeds may be slightly higher or lower than the posted speed limit.

The vast majority of 85th percentile speeds are higher than the posted speed limit, as we have shown above.

The upward adjustment of the speed value by five miles per hour accommodates the condition wherein the 85th percentile speed is slightly above the posted speed limit.

But as we have seen, it does not accommodate the very common situation on Los Angeles roadways where the 85th percentile speed of free-flowing traffic is more than 5 mph higher than the posted speed limit.

Further increasing the yellow change interval to accommodate the drivers driving beyond the 85th percentile speed would encourage disrespect for traffic signal control not just at one site but possibly at other traffic signals as well.

Further increasing the yellow change interval is not meant to accommodate drivers driving beyond the 85th percentile speed. It is meant to accommodate variations in human perception-reaction time and the slower deceleration of heavy vehicles such as city buses. Furthermore, the LADOT currently sets the yellow signal time at PRL intersections .3 seconds beyond what they claim is the MUTCD standard. Why are they not concerned that this will "*encourage disrespect for traffic signal control not just at one site but possibly at other traffic signals as well*"? The reason, of course, is that driver disrespect for traffic signal control does not occur until you lengthen the yellow signal significantly beyond driver expectation. The studies referenced in the "Engineering Countermeasures" report (and completely ignored in this LAPD response) show that yellow signal times under about 5.5 to 6 seconds do not cause drivers to willfully change their behavior. This is why the MUTCD states: "A yellow change interval should have a duration of approximately 3 to 6 seconds". The practice suggested in the "Engineering Countermeasures" report would rarely if ever result in yellow times much over 5 seconds.

In the Federal Highway Administration report (also cited by Mr. Beeber), Making Intersections Safer: A Toolbox of Engineering Countermeasures to Reduce Red-Light Running, it was noted that a yellow "interval that is too long could decrease the capacity of the intersection and increase the delay to motorists and pedestrians. Present thought is that longer intervals will cause drivers to enter the intersection later and it will breed disrespect for the traffic signal. The tendency for motorists to adjust to the longer interval and enter the intersection later is referred to as habituation."

A thorough reading of this section of the FHWA report makes is clear that the authors are referring to yellow times longer than 6 seconds. The section where the above quote appears concludes, "The Manual of Traffic Signal Design (45) cautions that change intervals greater than 6 sec. should be examined critically before being implemented. They cite loss in efficiency and capacity at the intersection and a tendency for local drivers to use more of the change interval when they know that it is longer than normal". Again, the "Engineering Countermeasures" report does not advocate yellow times greater than 6 seconds.

Furthermore, the cited studies which show significant benefit to lengthening the yellow change interval typically examined locations where the yellow change intervals were shorter than engineering guidelines, and thus were lengthened to meet those guidelines.

This is categorically untrue and the LAPD report provides no references to back up this claim. A careful reading of the cited studies, specifically the Texas Institute study by Bonneson (reference 1) shows that the difference in the yellow interval of +1 second which showed a 53% decrease in violation frequency (table 2-2 in the study) is the difference between the "observed" yellow interval and the "computed" yellow interval. The computed yellow interval is stated as being the value that would be computed using the ITE kinematic formula which calculates the minimum yellow interval (which is also the formula the DOT uses for calculating the yellow time using the posted +5 method). Therefore, the additional 1 second of yellow time is *in addition to* the yellow times calculated using engineering guidelines, not times shorter than engineering guidelines as claimed in the LAPD report.

At all PRL intersections, an all-red clearance interval is already implemented.

Yes, it was implemented when the cameras were installed and likely is a huge factor in the safety improvements seen at PRL intersections. This leads to the inevitable conclusion that at non-PRL intersections where the all-red phase is missing or insufficient, this countermeasure will improve safety, just as the "Engineering Countermeasures" report suggests, and red-light cameras will likely not be necessary. Remember, the criticism is not that the all-red phase isn't being employed at PRL intersections; the criticism is that when it was employed, the benefit of doing so was not evaluated prior to the decision to install the cameras.

As with other intersections, an all-red clearance time is implemented based on the width of the cross street and the posted speed limit plus five miles per hour.

Unfortunately, the DOT does not explain what formula it uses to calculate the all-red interval, only that it is "based on" the width of the cross street. We previously attempted to get a copy of the written guidelines for how this interval is calculated, but were told that no written guidelines exist. The ITE has a formula to determine the necessary all-red phase which takes into account the width of the intersection and vehicle approach speeds.

We did a spot study of the all-red times at a number of intersections throughout the city and found that they varied significantly from intersection to intersection and even between intersections of similar widths. We could find no consistency in the application of the all-red phase and therefore surmise that the ITE formula is not being used.

Further extending the all-red clearance interval would reduce the capacity of the intersection and exacerbate delays, especially in congested corridors.

If this is true, then why would the all-red phase vary so significantly between intersection approaches along the same corridor which would presumably have similar amounts of congestion? For example, the all-red phase on the Roscoe approach to the intersection of

Mason Ave., is a scant .47 seconds, but the Roscoe approach to the intersection of Lindley Ave., within the same corridor is 1.1 seconds. It is difficult to believe that the all-red at Roscoe and Mason is set so short because the DOT is concerned about intersection capacity or that lengthening the all-red to match the Roscoe/Lindley intersection would increase congestion to such a degree that it would be unfeasible.

Furthermore, according to Stein in "*Traffic Signal Change Intervals: Policies, Practices, and Safety*", studies have shown that "adding 1 or 2 seconds to the traffic signal change interval timing reduces traffic conflicts without significantly affecting traffic operations". A study by Findley, "*Evaluation of Increased Intergreen Time at Signal Sites Operating Close to Capacity*", concluded that an increase in change interval time did not increase intersection congestion, even at intersections operating near capacity. In any case, the all-red phase should be set to at least the minimum required based on the width of the intersection and the speed of traffic typical for that section of roadway. For most major intersections in Los Angeles, the all-red phase would need to be set at a minimum of 1.5 - 2 seconds in order to meet this requirement.

Protected left turn signals can reduce left turn opposing traffic collisions. However, they can also significantly reduce traffic flow and volume. The City installs protected left turn arrows at intersections if there is a documented collision history in accordance with the goals of balancing intersection safety with sufficient traffic flow.

We generally agree with this approach, which is why the "Engineering Countermeasures" report states that "at intersections where left-turn-opposed crashes are over represented, significant safety improvement can be achieved by implementing a protected left turn (red arrow) phase". However, we are concerned about the DOT statement on "balancing intersections safety with sufficient traffic flow". Broadside and angle collisions due to unprotected turns into oncoming traffic are among the most serious, and constitute many of the accidents that cause injury and death. One would hope that any balance between safety and traffic flow would be tipped in favor of improved safety.

Red light running results from a combination of factors. It would be inaccurate to classify red light running as either wholly "intentional" or "unintentional." Consider drivers who intentionally speed up in order to beat the red light but are "unintentionally" behind the limit line when the light turns red.

First, we would put this in the "intentional" category because in the example proposed, the driver would have made a willful attempt to "beat the light" knowing they could have stopped. That decision would have been the immediate cause of the violation. Second, the fact that you can find an example that is in the "grey area" of intentionality, doesn't negate the fact than most other types of violations easily fit into one category or another. Third, the distinction between intentional and unintentional violations is not our construction. Numerous researchers categorize red-light violations in this manner. We simply adopted their terminology. Finally, the behavior described above, whether you consider the violation intentional or unintentional, would not result in a broadside collision at a properly engineered intersection with a sufficient all-red phase. The driver in this example would violate the signal very early into the red phase, perhaps an eighth to a quarter second late. The all-red phase would protect cross traffic from entering the

intersection while this driver is traveling through it. Recognizing that some "rushing of the red" will occur at signalized intersections, and recognizing that violations that result will be very early in the red is critical in understanding why a sufficiently long all-red phase in necessary.

The response, however, completely skirts our main point which is that broadside collisions are generally the result of late-into-red violations which occur from impairment, distraction and fatigue. Red light cameras cannot prevent these accidents because if the driver is unaware of the red light, they will certainly be unaware of the cameras. This cannot be overstated. Red-light cameras cannot prevent accidents caused by impairment, distraction and fatigue and these are the primary factors involved in the vast majority of serious red-light related accidents.

Unintentional violations should also be considered for enforcement solutions. A major advantage of enforcement solutions is that they modify driver behavior and attitude.

Even if one could modify driver behavior to reduce certain types of unintentional violations, the question would then be whether *red-light cameras* are an efficient and cost effective method for achieving this goal. While the presence of police officers patrolling the city may modify driver behavior in this manner, red-light cameras are unlikely to have a similar effect. Unfortunately, the PRL program diverts officers from patrol duties where they can have a significant effect not only on modifying driver behavior, but on crime in general. Police officers on patrol have a widespread positive effect on safety throughout the city. Red-light cameras are no substitute for cops on the beat.

Engineering solutions may be appropriate as well, but engineering and enforcement are not mutually exclusive.

We have never suggested that they are mutually exclusive, only that when it comes to improving intersection safety, engineering solutions are much more effective than red-light cameras. Engineering countermeasures are *proactive*, as opposed to photo enforcement which is *reactive*. Proactive solutions are always better than reactive solutions. Engineering countermeasures can *directly* prevent two vehicles from occupying the same space at the same time. Any benefit from photo enforcement is *indirect* and often comes long after a violation or accident occurs. And even then, it can only modify the behavior of drivers who are prone to "rush the red". A sufficient all-red phase can *directly* prevent accidents caused by this behavior much more effectively than any *indirect* effect from photo enforcement.

Expert opinions indicate that a significant amount of red light running is intentional...

The LAPD response provides no documentation of the truth of this statement. In fact, the data suggests otherwise. If a significant amount of red-light running is intentional, then why do we see such huge reductions in violations when the yellow signal time is lengthened? In Loma Linda, CA violations decreased by 92 percent after the yellows were lengthened by one second. This means that 92% of the prior violations were *unintentional*. Similar results have occurred virtually everywhere yellow times have been

increased. See our charts on the results from San Diego and Virginia in Appendix C which show significant reductions in violations when the yellow time was lengthened.

...and that enforcement countermeasures can sometimes have a more dramatic impact than engineering countermeasures.

Again, no documentation.

Traffic violators often run red lights because they believe they can get away with it.

We recognize that police officers trained primarily in enforcement will perceive this to be true, but the data we have provided strongly suggests otherwise. Certainly, some drivers will occasionally run a red light for this reason, but it is not *often* the reason for red-light running, deficient engineering is.

In addition, PRL warning signs are posted far enough back from the intersection to give motorists ample opportunity to stop for the red light. The placement of warning signs is an effective countermeasure to alert drivers that they are approaching an automated enforced intersection which decreases the chance of sudden braking, resulting in rear end traffic collisions.

Signs warning that an intersection is enforced by red light cameras do not give motorists "ample time to stop", a yellow light timed at or slightly above the 85th percentile speed of traffic does. Furthermore, they *increase*, rather than *decrease* the chance of sudden braking. To suggest otherwise is unsupportable. Again, the statistics we studied at the intersection of Sherman Way and Louise bear this out. Please see Appendix D where we show that rear end collisions increased by as much as 90% after the cameras (and the warning signs) were installed.

In contrast, the City's traffic signals go through a comprehensive design process and are implemented to meet or exceed the California (CA) and National MUTCD standards for effective visibility, conspicuity, and redundancy.

We commend the DOT for their diligence in this area. However, that does not mean that there is nothing whatsoever that can be done at signalized intersections to improve conspicuity or the overall engineering of those intersections *where necessary*.

The chart that follows the above statement shows a number of excellent engineering practices currently employed by the LADOT. However, it does not include a number of countermeasures that have been shown to reduce red-light running collisions and which should be considered (if DOT is not already doing so) for any future intersections where a red-light running problem may exist. These include adding a high visibility yellow retro-reflective border to the face of the existing signal backplates, synchronizing signals to reduce the number of red lights encountered by motorists, increasing the signal cycle length, and providing green extension through advance detection loops to minimize the chance a vehicle will be in the dilemma zone when the light turns yellow. Bear in mind, though, that the countermeasures that have been proven to be most effective in reducing red-light running are also the least expensive – lengthening the yellow phase to at or

slightly above the time required using the 85th percentile of free flow traffic and employing a sufficient all-red phase.

Mr. Beeber and the City are in agreement that there were five fatal traffic collisions that occurred at PRL intersections, prior to the installation of the cameras.

No, we are not. As we have explained numerous times, at one of those intersections, a red-light camera was in operation when the fatality occurred, albeit by a previous vendor. It is not factual to claim that this fatality occurred "prior to the installation of the cameras" and we ask the LAPD (and the camera vendor) to stop making this inaccurate claim.

All reports that listed "red light" violation as the primary cause of the collision were considered, as well as violations that could reasonably have been caused by a red light violation, but were attributed to another violation. For example, consider the collision between a pedestrian and a garbage truck…

This depends on your definition of "reasonable". Apparently the LAPD's definition is "any possibility whatsoever". We hold ourselves to a higher standard where the proof should at least rise to the level of a strong possibility rather than pure speculation. We will not here reiterate our full reasoning why the garbage truck accident should never have been included in the "five fatalities" statistic other than to say that it is highly unlikely that a red-light violation occurred due to the fact that the pedestrian and the garbage truck were both initially traveling in the same direction and it is unlikely they both ignored a red signal. Our full analysis of the five fatal accidents appears in Appendix E.

Collisions where drivers claimed that they were "tired" or "distracted" were still included because a driver's own report as to their reason for running a red light is not considered reliable testimony.

But other evidence, such as how late into red the accident occurred, is reliable evidence as to whether this is the type of accident that can be prevented using red-light cameras. As we explained above and in the "Engineering Countermeasures" report, late-into-red accidents are generally caused by impairment, distraction and fatigue and red-light cameras have no effect on this. The LAPD is using these fatalities to try to show the effectiveness of the cameras. If the accidents were caused by factors which the cameras can't remedy, then it is improper to use the absence of these types of accidents as proof that the cameras were effective in preventing them.

Furthermore, inattention and other irresponsible driving habits are the kind of behavior that is best remedied through consistent enforcement.

Perhaps, but *photo enforcement* isn't a particularly effective form of enforcement to remedy this kind of behavior. The type of enforcement must be matched with the behavior one wishes to modify. Officers on patrol are the proper form of enforcement to remedy inattention. Notice that the argument in favor of photo enforcement has now shifted from "they will stop red-light running" to "they will remedy inattention and other

irresponsible driving habits". There is no data to show that this can be an expected result from the use of red-light cameras to any measurable extent and as such it is simply wishful thinking.

This collision is an example of the tremendous benefit of the PRL Program, since the apprehension and prosecution of the suspect in this case was aided by the use of the photographic evidence.

First, this collision is an example of how red-light cameras cannot stop the most dangerous kind of red-light running caused by impairment, distraction and fatigue. Second, the fact that the camera was an aid to apprehending this one individual is not a reasonable argument for the deployment of a multi-million dollar red-light camera program with its attendant negative consequences. Notice that now the argument in favor of photo enforcement has shifted again to "it will help catch hit and run drivers". Better to implement inexpensive engineering countermeasures to reduce the chance of an accident occurring, putting the police officers back on the streets to catch drunk drivers (before they cause an accident) and use the savings to purchase a city-run closed circuit monitoring system for intersections that provides video round the clock, rather than only when a violation occurs.

The goal of the City's PRL Program is to reduce serious injury and fatal traffic collisions caused by drivers who fail to stop for red lights through high profile enforcement and education as well as to maximize the effective use of police resources.

Unfortunately, police resources are being wasted by this program. Engineering solutions will make the intersections safer and the police officers' time can be put to better use than sitting at a computer monitor approving violations or appearing in court to testify to violations that need never have occurred or pose no threat to public safety.

In March 2011, the National Safety Council released a report that tracked fatal and non fatal traffic collisions over a five year period. It tracked crash trends at PRL intersections...

No it did not. The study did not track crashes at PRL intersections and, in fact, makes no mention of red-light cameras or photo enforcement. The study looked at red-light running trends at <u>*all*</u> intersections not ones with red-light cameras. Apparently, the author of this section of the LAPD response did not read or understand the study they referenced.

The study concluded that over this five year period, there were 256 less red light running fatal crashes which represented a 58 percent decrease.

Since this study had nothing whatsoever to do with red-light cameras, we won't spend much time on it other than to point out that the decrease was over a 5 year period across the entire U.S. which calculates out to 1 fatal crash in each state each year. Furthermore, no cause for this decrease is identified or suggested in the report.

Since the cameras were installed in 2006, red light related traffic collisions have decreased by 63 percent…

And as previously shown by us and by the City Controller, and admitted to by the LAPD at the end of this paragraph, it was the signal timing changes made by the LADOT that is responsible for this decrease (along with other factors such as traffic volume reduction caused by high gas prices and the recession).

…and there have been no red light related fatalities at PRL intersections.

And there have been no red-light related fatalities at 4536 other non-PRL signalized intersections throughout the city during this same time period as well. Red-light related fatalities are relatively rare in Los Angeles and almost never occur at the same intersections from year to year, they occur randomly. Using the above statistic to suggest that the cameras have had any effect on fatalities is unsupportable.

The engineering countermeasures and rigorous signal design standards implemented by LADOT at PRL intersections undoubtedly have an impact on public safety.

We wholeheartedly agree. We hope these same countermeasures will be employed at any other intersections that might have an elevated number of red-light related crashes. Safety will improve and spending millions of taxpayer dollars on a new red-light camera contract will be unnecessary.

We also believe that engineering countermeasures depends in large part on their ability to be consistently enforced.

This statement is nonsensical. One does not "enforce" engineering countermeasures. One implements them. They stand on their own as an effective means to improve safety.

Respect for traffic laws and reducing dangerous driver habits are essential to traffic safety…

Unfortunately, the PRL program has the opposite effect of breeding disrespect for traffic laws and those that enforce them. The public realizes that the program unfairly makes violators out of otherwise law-abiding and conscientious motorists by setting up a "gotcha" scenario. Yellow signal times that are too short for the actual speed of traffic create dilemma zones in which motorists may neither be able to stop safely nor legally enter the intersection before the onset of the red phase. Dilemma zones virtually assure that some percentage of drivers will be forced to violate the red resulting in a $466 ticket.

Additionally, citizens rightly question whether the millions of dollars worth of tickets being issued annually to Los Angeles motorists for rolling-right-turns, a driving maneuver that rarely result in any kind of accident, is a legitimate use of city and law enforcement resources. Their disrespect for our laws and government officials is bolstered through the knowledge that these types of tickets comprise 75% of all PRL citations and as much as 97% at some PRL intersection approaches.

Finally, their trust in government is further eroded as they witness a for-profit vendor lobbying government officials with spurious data and statistics in an attempt to mislead our decision makers and the public into supporting a program that lines their pockets at the expense of the taxpayers and encourages otherwise responsible engineers to resist lengthening yellow lights which would improve safety.

...therefore, a strong law enforcement component must always accompany even the most rigorous engineering program.

Always? What if the engineering component eliminates the problem? Should we still spend millions of dollars and divert precious resources enforcing something that doesn't need to be enforced?

RECOMMENDATIONS

It is requested that the Board approve the aforementioned "Recommended Actions."

We ask that the Board of Police Commissioners not approve the department's report and instead take a strong position that before any new photo enforcement contract is signed, intersections suspected of having an increased risk of red-light related crashes be evaluated to determine which engineering countermeasures would be most appropriately implemented to alleviate the problem. At the very least, at problem intersections, the yellow signal time should be increased to comply with ITE standards using the 85th percentile of free flowing traffic and an all-red phase should be implemented or increased to allow late arriving vehicles to clear the intersection before cross traffic is released. The countermeasures employed must then be evaluated to see if the red-light related accident rate has been reduced to acceptable levels. Until that process is completed, no new PRL contract should be approved. For your consideration, we provide a template for this process in Appendix F.

Appendix A

Testimony of Matt Gauntt, P.E. to the Illinois Senate

I would like to thank the Chairman and the Committee for inviting me to share some thoughts today about this important topic.

I have been a traffic engineer for 20 years. During that time, I have reviewed thousands of crash reports and analyzed hundreds of intersections. I've served as an expert witness for DuPage County, Kane County and the City of Crystal Lake in the area of traffic engineering. I have also taught a course on the Manual on Uniform Traffic Control Devices for IDOT District One engineers.

One of the more pertinent assignments that I have completed during my career was a series of studies for the Illinois Department of Transportation to examine some of the most dangerous intersections in the suburban areas of District One. The studies were funded through a series of grants that the Department received from State Farm Insurance in 2002. I was the principal author of those studies for IDOT.

As a part of those studies, I reviewed the viability of red-light running cameras and their applicability to solve the traffic accident problems at those intersections. After careful consideration of the available technical literature, and the condition of the intersections that I studied, I recommended to the Department that red light running cameras were not a recommended solution to the problem. The data analysis revealed inconclusive evidence of any improvement to the motoring public from the utilization of red light running cameras.

To expound on that study, I would like to share some of the conclusions that I have developed regarding the issue of red-light running cameras through an analysis of the existing literature on the topic.

Let's start with the technical studies that have been completed regarding the issue.

VTRC Study, 2007

One of the most thorough studies of the use of red light running cameras was a study that was completed by the Virginia Transportation Research Council (VTRC) entitled "The Impact of Red Light Cameras (Photo Red Enforcement) on Crashes in Virginia", dated June 2007[1]. The study examined the impact of red light running camera installations at 29 intersections in six different jurisdictions. The results of that study were:

- When normalized for time (i.e the number of years each intersection was studied) the installation of red light running cameras resulted in an increase in rear-end accidents of 37%, a decrease in red-light running accidents by 29%, an increase in injury accidents of 17% and an increase in total accidents of 23% for all intersections[2]. [EXHIBIT 1] [EXHIBIT 2]

The results of the VTRC study showed that the installation of red light running cameras significantly increases both the total number of accidents and the total number of injury accidents.

North Carolina Study, 2004

The Urban Transit Institute, North Carolina Agricultural and Technical State University of Greensboro completed a study in July 2004 of 18 red light running camera installations in Greensboro, North Carolina[3]. In this study, they compared camera installations with a control group of signalized intersections. Their findings were:

- The total number of accidents for the camera installations were reduced by 2.5% for a normalized 10-month before and after period[4]. [EXHIBIT 3]

---

[1] Virginia Transportation Research Council (VTRC), Final Report VTRC 07-R2, June 2007; Garber, Miller, et. al.
[2] VTRC Study, page 71, Table B12
[3] Mark Burkey and Kofi Obeng, Co-Principal Investigators; "A Detailed Investigation of Crash Risk Reduction Resulting from Red Light Cameras in Urban Areas"
[4] Burkey and Obeng, page 22, Table 4.1

- However, an examination of the camera installations versus the control group showed that the intersections without the cameras showed a higher reduction of accidents during the same period[5]. Thus the reduction in accidents most likely had more to do with an overall reduction for the entire community rather than the affect of installing red light running cameras, and those intersections with red light running cameras showed less of an improvement. [EXHIBIT 4]
- The author's cite a study completed by Joseph Milazzo, et. al. for the North Carolina Governor's Highway Safety Program in June 2001 which concluded that all of the crashes caused by red light running involved vehicles entering the intersection more than 1.0 seconds after the onset of red, and the large majority entered the intersection more than 3.0 seconds after the onset of red[6]. This shows that there is a distinction between the driver that is just rushing the red light, who may be stopped by red light running camera enforcement and the distracted or reckless driver that enters the intersection well after the light has turned red. The latter, would not typically be stopped by the use of red light running camera enforcement.

The conclusion of the North Carolina study was "At a minimum, we can say that *there is no evidence that the RLC {Red Light Camera} program is decreasing accidents.* Additionally, the data shows that the sites with RLC's are not benefiting from the overall decreasing trend in accidents in Greensboro. There appears to be an increase in most types of accidents that correlates with the placement of a RLC at an intersection"[7].

---

[5] Burkey and Obeng, page 23, Tables 4.2 and 4.3

[6] Burkey and Obeng, page 11, citing the study "A Recommended Policy for Automatic Electronic Enforcement of Red Light Running Violations in North Carolina", for the North Carolina Governor's Highway Safety Program, June 2001; Joseph Milazzo, Joseph Hummer, and Leanne Prothe.

[7] Burkey and Obeng, page 47

IIHS Study – Oxnard, CA - 2001

Perhaps the study that is referenced the most by red light running camera advocates is the Insurance Institute for Highway Safety (IIHS) completed by Richard Retting and Sergey Kyrychenko in 2001[8]. The authors cite a 29% reduction in injury crashes at signalized intersections in Oxnard, CA. However, many reviewers have pointed out serious problems with the study:

- The study did not look at a true before and after analysis of the intersections, but looked at a city-wide reduction over the study period and then compared those city-wide accident reductions to other cities in California with similar population and numbers of accidents. Thus, the study only looked at the overall growth rate of accidents citywide and not at the true effect of red-light running cameras.
- In comparison, the authors looked at the number of accidents in other, similar cities. However, in the late 1990's California's population grew at a very high rate. Looking at two cities cited in the study, Santa Barbara grew at a rate of 7.89%, whereas Bakersfield grew 41.32%[9]. This difference in population growth rates would affect the total number of accidents tremendously.

Alternative Improvements

The utilization of red-light running cameras was started out of a desire to decrease the number of red light running accidents. The intent of the effort should be applauded. However, there are a number of other methods, which are far more effective, which should be employed instead.

- A study completed by the Texas Transportation Institute in September 2004 found that an increase in the yellow time interval of 1.0 seconds would result in a decrease of 35-40% of red

---

[8] "Reductions in Injury Crashes Associated with Red Light Camera Enforcement in Oxnard, CA", Richard A. Retting and Sergey Kyrychenko, Insurance Institute for Highway Safety, 2001

[9] Burkey and Obeng, page 13

light running accidents[10]. This approach is perhaps the simplest and easiest intersection modification that can be made, and potentially has the greatest benefit. [EXHIBIT 5]

- According to the same study, adding backplates on traffic signal heads reduces the violation rate of red light running by 25%[11]. This issue is of particular importance to the City of Chicago, as the majority of signals in the City do not have backplates. Adding backplates to an intersection would cost only a couple of thousand dollars. [EXHIBITS 6 & 7]
- Detailed engineering studies can help to determine the real causes of accidents at an intersection. Through the studies that I worked on for IDOT, we discovered signal heads that were turned the wrong direction, signal heads that were covered by overhead power lines, poor illumination, driveways located within 50 feet of the intersection, poor pavement conditions, striping that had been completely worn off, signal controller cabinets that blocked visibility and heavy congestion problems.

The underlying problem with the use of red light running cameras is that the money that is collected in the form of fines could instead be used to fund real solutions that will solve greater problems.

Conclusion

After reviewing the technical literature and examining the advent of red light running cameras for myself, it is my opinion that the use of red light running cameras will not improve traffic safety and may very well result in a decrease in safety to the motoring public. At best, the evidence points to a no significant improvement to safety based on their use. Instead of utilizing red light running cameras, there are numerous solutions that will have a far greater likelihood of improving traffic safety.

---

[10] Texas Transportation Institute; "Development of Guidelines for Identifying and Treating Locations with a Red-Light Running Problems", September 2004, page 6-2, Table 6-1

[11] Texas Transportation Institute; "Development of Guidelines for Identifying and Treating Locations with a Red-Light Running Problems", September 2004, page 6-5, Table 6-2

APPENDIX B

WHY RED-LIGHT CAMERAS CANNOT BE CREDITED WITH IMPROVING INTERSECTION SAFETY IN LOS ANGELES

Although the LAPD claims that any reduction in accidents seen at PRL intersections is due to the presence of red light cameras, the facts suggest otherwise. As the City Controller's audit correctly points out, "LAPD does not consider all factors in reporting the program's results… attributing these results solely to automated enforcement is questionable".

Since a properly designed independent study employing scientific methods and controls was not performed at PRL intersections, the LAPD's claims of success cannot be supported. In fact, when other likely explanations for changes in accident totals are considered, the effectiveness of the PRL program becomes highly suspect.

Other Possible Causes for a Reduction in Accidents

A. Concurrent with the installation of the current photo red-light system, the yellow signal timing at all photo red-light intersections was increased to comply with the minimum requirements set out in California law. In addition, the LADOT instituted an all-red phase at PRL intersections as well. At intersections where these changes were implemented, one would expect to see a significant reduction in red light related accidents, exactly as the LAPD claims has occurred. Again, as noted in the Controller's audit, "That change alone (likely) made the intersections safer", not the installation of red light cameras. Increasing the yellow signal timing and implementing an all-red phase has reduced accidents at signalized intersections. An adjustment in the yellow and red phases to account for the actual speed of traffic approaching high risk intersections will further increase safety throughout the city and eliminate the need for costly photo enforcement.

B. As the Controller's audit also revealed,

> "A general reduction in collisions could have been the result of there being fewer cars on the road, due to a significant increase in fuel prices. We noted over a ten-month period, average gas prices rose by 64%. We also noted there was a 4.6% decline in statewide fuel consumption that year (2008), as well as a 2.6% decline in traffic volume on State highways in LA County."

The price of oil nearly tripled from $50 to $147 from early 2007 to 2008. Within months of fuel prices hitting record highs in the summer of 2008, the current financial crisis began to take hold, further reducing traffic volume. As the audit succinctly notes,

> "Fluctuations in traffic volume can directly influence the number of traffic collisions, but LAPD indicated they were not monitoring traffic volume - either citywide or at PRL intersections".

Experts in traffic collision analysis, including the LADOT Risk Management Division, use traffic volume to calculate accident *rates* (typically per million vehicles entering the intersection), as opposed to simply comparing raw numbers of accidents. Without adjusting for fluctuations in traffic volume, calculating changes in the absolute number or percentage of accidents tells us little about whether red light cameras have increased safety.

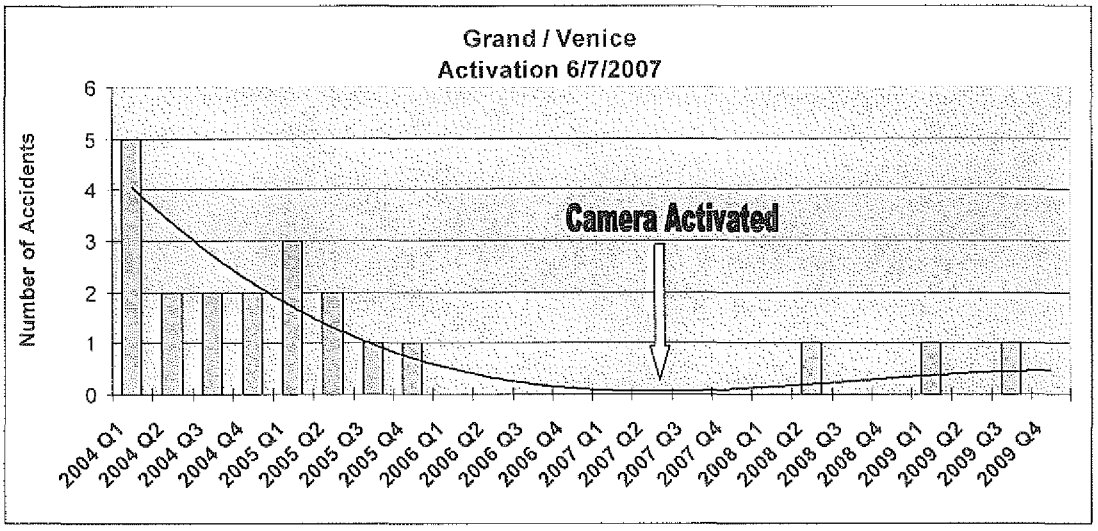
C. In the two years the LAPD chose for their "before" statistics, 2004 and 2005, the Los Angeles area experienced one of the harshest winters on record. The winter of 2004 - 2005 was the second worst "el Niño" winter in terms of severe weather with a total rainfall of approximately 38 inches, almost 22 inches above the average. Rainfall totals of this magnitude had not been seen in L.A. since the winter of 1883-1884. In contrast, the winters since 2005 have all witnessed lower than average rainfall. Any police officer or traffic safety expert will attest to the fact that increased rainfall leads to increased accidents, especially in Los Angeles where drivers are unaccustomed to these treacherous conditions. As an example, the following is an excerpt from a CBS2 news report from December 20, 2010:

> Rain continued to pelt the Southland on Monday, causing power outages and a significant rise in traffic collisions, along with breaking rainfall records for this date in several locations in Los Angeles County.... About 175 crashes were logged between 9 a.m. and 3 p.m... compared to 53 in the same period last Monday when roadways were dry (a 230% increase).

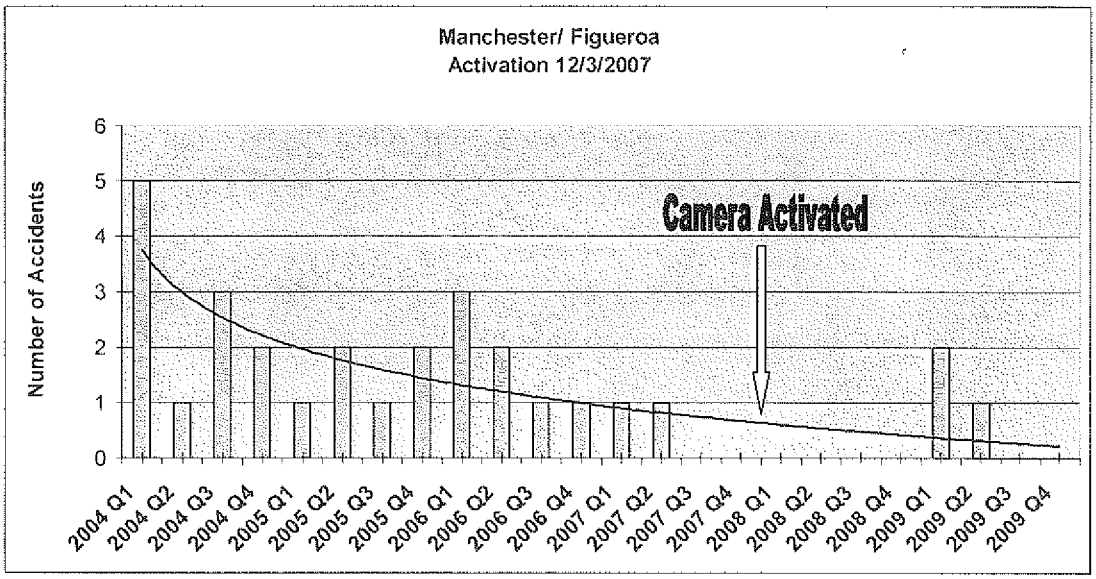
It is therefore no surprise that accident rates from one of the rainiest winters on record are higher than in subsequent years.

Alternative Analysis

While it is difficult to pinpoint exactly what may have caused any reduction in red-light related accidents at photo enforced intersections, a further analysis of accident data suggests that it is not due the installation of red-light cameras. We reviewed accident statistics for the years in question using data obtained from the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS) database. We found that although the years 2004 and 2005 generally showed what appeared to be a higher than average number of collisions at these intersections, by 2006 the accident rate had begun to decline. This is significant in light of the fact that photo enforcement at PRL intersections was rolled out in stages between mid-2006 and the end of 2007. For the years 2004 through 2009 (the same years the LAPD used for their statistics), we counted red-light related accidents in each quarter at the two intersections with the largest numbers of red-light related accidents prior to camera installation. The results appear below.



The intersection of Grand and Venice exhibited a cluster of accidents in 2004 and 2005, but by 2006 the accident rate had dropped to zero. Photo enforcement was activated on 6/7/2007, more than a year and a half after safety had improved at this location. Therefore, the reduction in accidents seen at this location cannot possibly be due to the installation of red-light cameras. Without further information from LADOT, we can't determine exactly what caused the reduction in accidents (we suspect it was a signal timing change or other engineering improvement) but, due to the timing involved, it is impossible to conclude that it resulted from photo enforcement. Using the same flawed methodology employed by the LAPD to obtain their 63% statistic (comparing 2004 and 2005 vs. 2008 and 2009), this intersection would show an 83.3% reduction in collisions. However, since this reduction occurred long before the cameras were installed and cannot possibly be the result of photo enforcement, we now know that using this comparison provides inaccurate and misleading results. This is a prime example of why using generalized statistics can lead to incorrect conclusions. The LAPD counts this intersection as one of its successes, but considering the data presented here, no principled argument can be made that photo enforcement caused any reduction in accidents seen at this location.



At the intersection of Manchester and Figueroa a similar trend can be seen. Slightly elevated numbers of accidents existed from 2004 through early 2006. But by mid-2006 accidents had begun to decline, diminishing to about one per quarter through mid 2007 with no accidents in the last half of the year. The cameras were activated at the end of 2007, again *after* the accident rate had dropped significantly and had continued trending downward for an extended period of time. While not as dramatic as the Venice/Grand example, it is still clear that cameras could not be the cause of the decrease in accidents at this location as they were activated after the decrease and downward trend had already occurred.

In summary, the LAPD is selectively reporting a 63% reduction in red light related accidents while ignoring other data which shows an increase in red light related collisions during the period when red light cameras were in place. Furthermore, the LAPD is willfully ignoring other factors that likely account for any reduction in accidents seen at photo enforced intersections such as changes to the signal timing, fluctuations in traffic volume and significant weather effects. The City Controller concurs, stating,

> "Without considering the context of citywide traffic collisions… or other factors such as changes in traffic volume or weather conditions, the reported program results measured as the change in the number of traffic collisions at PRL intersections may not be adequately attributed to the program".

APPENDIX C

SIGNIFICANT REDUCTIONS IN VIOLATIONS OCCUR WHEN THE YELLOW SIGNAL TIME IS LENGTHENED

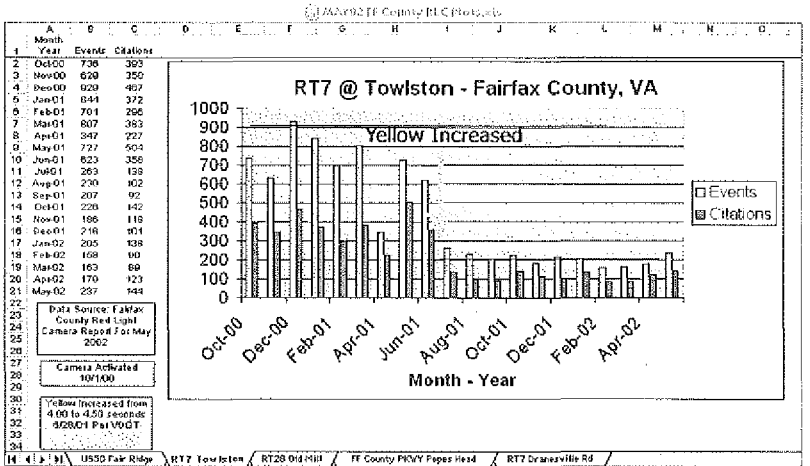
The chart below shows a 30% to 55% reduction in violations achieved at San Diego red-light camera sites when the yellow interval times were increased.

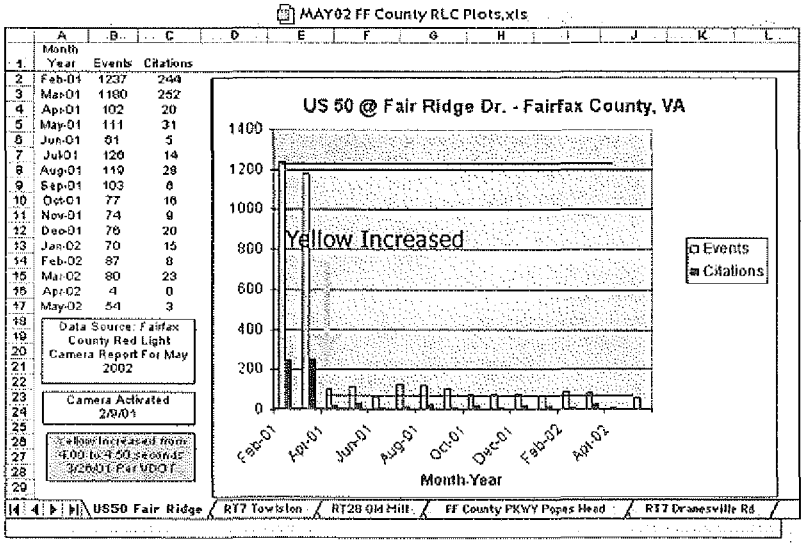
RESULTS FROM INCREASING YELLOW TIMES AT 6 of 19 SAN DIEGO RED LIGHT CAMERA SITES:

DEF	LOCATION	BEFORE YELLOW (seconds)	BEFORE VIOLATIONS (per 100 hrs)	AFTER YELLOW (seconds)	AFTER VIOLATIONS (per 100 hrs)	YELLOW INCREASE (seconds)	VIOLATION REDUCTION (percent)
1454	WB GARNET AVE @ INGRAHAM ST	3.00	98.8	3.20	55.9	0.20	-43.4%
1504	WB 'F' ST @ 16TH ST	4.00	49.4	4.90	22.5	0.90	-54.5%
1534	WB MIRAMAR RD @ CAMINO RUIZ	4.40	42.5	4.80	29.8	0.40	-29.9%
1541	NB MISSION BAY DR TO WB GRAND AVE	3.30	363.4	4.70	42.2	1.60	-88.4%
1542	SB MISSION BLVD @ GARNET AVE	3.00	49.9	3.70	30.3	0.70	-39.3%
1553	EB MIRA MESA BLVD @ SCRANTON RD	3.90	98.7	4.30	52.7	0.40	-46.6%

SOURCE: San Diego Photo Enforcement System Review January 14, 2002

Likewise, the following two figures show how Fairfax County, VA achieved a significant, sustained reduction in violations when the yellow timing was increased by ½ second.





APPENDIX D

Rear End Collisions at Sherman Way and Louise

Camera Installed 5/14/2007

Year	# within 150 ft	Alcohol Related**	# within 75 ft	Alcohol Related**	# within 50 ft	Alcohol Related**
2002	3		2		2	
2003	3		2		2	
2004	3	2	3	2	3	2
2005	1		1		1	
2006	2	1	2	1	2	1
2007 BC	2	1	1		1	
2007 AC	1		1		1	
2008	9	1	8	1	7	1
2009	7	1	6	1	5	1

AVERAGE DAILY TRAFFIC		
SHERMAN WY AT FORBES AV	9/14/2004	44,784
SHERMAN WY AT BALBOA BL	7/24/2008	35,447
SHERMAN WY AT LINDLEY AV	7/22/2008	35,302
SHERMAN WY AT LOUISE AV	5/15/2008	32,722

Forbes and Balboa are one block apart and should have similar traffic counts. They are the closest locations to Louise (1/2 mile) with traffic counts both before and after the cameras were installed.

Results of Rear End Collision Analysis

Within 150 ft including alcohol related		
	Accident Rate	Accident Count
2004	0.00006698821	3
2008	0.0002539	9
% Change	74%	67%

Within 150 ft not including alcohol related		
	Accident Rate	Accident Count
2004	0.00002232940	1
2008	0.000225689	8
% Change	90%	88%

Within 75 ft* including alcohol related		
	Accident Rate	Accident Count
2004	0.00006698821	3
2008	0.000225689	8
% Change	70%	63%

Within 75 ft* not including alcohol related		
	Accident Rate	Accident Count
2004	0.00002232940	1
2008	0.000197478	7
% Change	89%	86%

*Rear end collisions within 75 ft of the intersection is the benchmark used by the LAPD in their various reports on the Photo Red Light Program.

**Alcohol related accidents are included in the accident numbers in the "# within" column. Alcohol related accident figures must be subtracted from the "# within" column to obtain figures "not including alcohol related".

APPENDIX E

FULL ANALYSIS OF THE FIVE FATAL ACCIDENTS AT PRL INTERSECTIONS CITED BY LAPD

At the invitation of Sgt. Matt MacWillie, head of the PRL Program, we reviewed the accident reports for the five fatality accidents cited by LAPD as proof of the efficacy of the red-light camera program. Upon examination it became clear that none of these accidents were of the type that could reasonably be expected to be prevented by photo red-light enforcement. In fact, two of the five accidents were clearly not even red-light related.

Details of the Five Fatal Accidents Used to Justify the LAPD Safety Claims

Accident #1 – 1/21/2004 Victory Blvd. and Laurel Canyon
Accident was caused by DUI, not a driver trying to beat the red light. Also, at the time of the accident, this intersection was being enforced with a photo red-light system administered by the previous vendor, ACS. This was not a fatality that occurred "prior to PRL enforcement", but rather a fatality that occurred during PRL enforcement with a *prior system*. Furthermore, as this type of accident makes clear, photo enforcement cannot prevent crashes caused by drunk drivers. Unquestionably, the red-light camera had no effect on whether this drunk driver ran the red light, as is the case with virtually all serious collisions that occur when drivers enter the intersection well into the red phase due to impairment, distraction or fatigue. This accident cannot be included in the "before" statistics as it was caused by a drunk driver and occurred at an intersection that was being photo enforced with a red-light camera.

Accident #2 – 2/9/2004 Western/MLK
Accident was caused by a pedestrian under the influence of drugs j-walking a bicycle across the street late at night. Furthermore, the accident occurred 33 feet beyond the intersection, not at the intersection itself. Witnesses stated the driver entered the intersection on yellow. This was not an accident caused by a red light runner. LAPD stated that they included this as "red-light related", because they believed that "*it was possible*" that the driver sped up to make it through the intersection before the light turned red, although they had no direct evidence for that assumption and the bicyclist was deemed at fault for the accident. Therefore, this accident cannot be included in the "before" statistics as it did not occur within the intersection and was not caused by red light running but rather by a pedestrian j-walking. Photo enforcement would have had no effect on preventing this accident.

Accident #3 – 6/23/2005 Beverly/Western
Pedestrian was struck in the crosswalk by a sanitation truck making a right turn from Beverly onto Western. The pedestrian was crossing Western. Witnesses claimed the truck had a green light. This is the logical conclusion as the pedestrian also would have had a green light to cross Western, accounting for his presence in the crosswalk. This accident was most likely caused by the truck driver failing to yield to the pedestrian possibly due to an obstructed view from the garbage truck. The truck driver was cited for failing to

yield to a pedestrian in a crosswalk, not a red light violation. This accident cannot be included in the "before" statistics as it was not caused by red light running. Photo enforcement would have made no difference in preventing this accident.

Accident #4 – 3/5/2005 Venice/Grand
A sixteen-year-old driver ran the light long after it was red. According to statements of those involved, this accident was caused by driver inattention. This accident cannot be included in the "before" statistics as it was caused primarily by a distracted, inexperienced driver, not intentional red light running. Photo enforcement has no effect on preventing this type of accident.

Accident #5 – 4/6/2006 Manchester/Figueroa
Accident occurred just after midnight. The driver claimed she was tired and didn't remember whether the light was red. This accident was most likely caused by driver fatigue. This accident cannot be included in the "before" statistics as it was caused by a fatigued driver, not intentional red light running. Photo enforcement has no effect on preventing this type of accident.

When the details of each accident are considered, it becomes clear to any impartial observer that using these five accidents to suggest that the City's photo red-light program has saved lives is not intellectually honest. For example, regardless of the fact that the LAPD was fully aware that the fatality at Victory and Laurel Canyon occurred at an intersection where a red-light camera was in use at the time of the collision, the LAPD chose to categorize this accident as a "before the cameras" fatality. It was not. It was a "before *the current set* of cameras" fatality. An unbiased study would never have included this accident in the "before" statistical group and no reasonable argument can be made for doing so since there was a red-light camera in operation and the accident was caused by a drunk driver.

In regards to the accident involving the sanitation truck, it's extremely unlikely that a red light violation occurred. The evidence in the accident report strongly suggests that the light was green at the time of the incident. The pedestrian and the garbage truck were both initially traveling in the same direction and it is unlikely they both ignored a red signal. Moreover, neither the driver nor the pedestrian was cited for violating the red. What most likely occurred was that the pedestrian stepped into the crosswalk on a green light and the truck driver began his right turn at approximately the same moment and just didn't see him. An unfortunate event, but not the type of accident that can be prevented using red light cameras. When we asked why the LAPD included this accident, the officer who compiled the statistics responded that, similar to the bicyclist accident at Western and MLK, he did so because "there was a chance the light *might have been red*". "Might have been" and "it was possible" aren't the proper criteria to use when deciding whether or not to include a particular data set in a before and after study. Since the LAPD knows that there is no evidence that a red light violation occurred, neither this accident nor the bicyclist accident should have been used to suggest that red-light cameras have prevented fatalities at photo enforced intersections, yet the LAPD continues to do so.

Finally, the two accidents caused by driver fatigue and distraction occurred well into the red phase, providing further evidence that the most dangerous red-light running accidents are not due to drivers trying to beat the light and thus can't be remedied by installing photo enforcement. The photo enforcement approach to curtailing the incidence of red-light running is solely intended to influence those drivers who willfully ignore or try to beat the red light. No one has ever suggested that red light cameras should be installed to prevent accidents caused by fatigued or distracted drivers. If the LAPD had intended to provide an honest analysis of the photo red light program, they certainly wouldn't have included accidents caused by distraction or fatigue.

APPENDIX F

Steps to Creating Safer Signalized Intersections

1. Collect data on intersections that have an elevated number of red-light related collisions listed in the database. Do not consider other types of accident such as speed related or left turn violations as these cannot be remedied by photo red-light enforcement.
2. Review the accident reports to eliminate all red-light related collisions that cannot be targeted by photo enforcement such as those caused by impairment, fatigue, distraction, etc.
3. For the remaining collisions, analyze the red light related accident rate to determine the expected crash frequency to determine if it is higher than a typical intersection.
4. If the intersection has a higher crash frequency than a typical intersection, conduct an engineering study to confirm the causes of the problem.
5. Match the cause to the solution. Identify and implement viable engineering countermeasures. These include but are not limited to:
    a) Increasing the yellow and all-red timing to conform with or slightly exceed the ITE standards using the actual speed of vehicles on the roadway (85^{th} percentile of free flow traffic) rather than the posted speed limit (least expensive).
    b) Implementing a protected left turn (red arrow).
6. Evaluate the effectiveness of the implemented countermeasures to see if the crash frequency is now representative of a typical intersection.
7. If the intersection still has a higher crash frequency than a typical intersection (unlikely), identify and implement additional engineering countermeasures.
8. Evaluate the effectiveness of the implemented countermeasures to see if the crash frequency is now representative of a typical intersection.
9. Repeat this procedure until the crash frequency is representative of a typical intersection or all viable engineering countermeasures have been exhausted.
10. If red-light related collisions are still excessive, consider enforcement countermeasures.

At all stages, document in detail all steps taken.

LAPD Photo Red-Light Program

April 19th, 2011

dailynews.com

Mark V. Rosenker: 'Report' findings are wrong; red-light cameras save lives

By Mark V. Rosenker
Posted: 04/13/2011 04:37:55 PM PDT
Updated: 04/13/2011 04:39:35 PM PDT

DURING my tenure as a member and chairman of the National Transportation Safety Board, I had the opportunity to closely monitor trends in traffic safety. In 2003, the year I joined the board, nearly 43,000 people died on our nation's roads. I believed that we as a nation needed to do significantly more both technologically and politically to reduce loss of life. Our efforts are now beginning to bear fruit.

Recently the National Highway Traffic Safety Administration reported that traffic deaths were at a 61-year low last year. While still an estimated 32,788 people tragically died in traffic accidents in 2010, that number represented a more than 25 percent decline since 2003 and marks the fewest traffic fatalities since 1949.

A lot of factors impacted the decline in traffic deaths. Among those are: safer vehicles; increased seat-belt use, achieved through stricter laws; more children buckled in to child restraint seats, achieved through laws designed to protect children in moving vehicles; a decrease in drunk driving, thanks to stricter enforcement by police and the implementation of more sobriety checkpoints; and the use of red-light and speed safety cameras to discourage drivers from running red lights and speeding.

Unfortunately, despite all of the progress that has been in reducing traffic fatalities, a vocal minority of citizens continues to advocate policies that if implemented, would reverse these trends. You know who they are, the same groups that have opposed most of the traffic safety improvements I've just mentioned. They don't like mandatory use of seat belts and child safety sea' And they view sobriety checkpoints and traffic safety cameras as intrusions on their personal freedoms, as though it should be their God-given right to drive impaired, or speed and run red lights with impunity.

Recently, this debate has heated up in Los Angeles, where misinformation - even disinformation - about the program has been spread by groups that have made their mark by opposing government safety regulations of any kind.

These groups have used distorted facts and inaccuracies to launch a campaign to end the city's red-light safety camera program, a program that in its six-year existence has not seen a fatality at any of the 32 monitored intersections Nixing the cameras on the heels of the recent advertisement research study from the Insurance Institute of Highway Safety that documented how well the cameras are saving lives would be foolhardy. The IIHS researchers concluded that red-light safety cameras saved 159 lives in 2004-08 in 14 of the biggest U.S. cities. Had cameras been operating during that period in all large cities, according to the IIHS, a total of 815 deaths would have been prevented.

In 2009 red-light running killed 676 people, including more than 100 in California, and injured an estimated 113,000 nationwide. Tragically, nearly two-thirds of the deaths were victims other than the red-light running drivers - occupants of other vehicles, passengers in the red-light runners' vehicles, bicyclists or pedestrians.

In a city like Los Angeles where the climate is an almost-daily invitation for people to get out and walk, jog or cycle, taking extra steps to protect the nonmotoring public from death or injuries makes sense.

I strongly urge the city of Los Angeles to closely review the credible and scholarly research studies and reject the so-called "reports" generated by self-proclaimed "experts" whose true mission is to curb all traffic safety initiatives implemented by government.

There no question there's room f os Angeles to fine-tune its traffic safety camera program. But it would clearly be a bad idea to eliminate it altogether.

Mark V. Rosenker of Virginia was appointed by President Bush to two terms at the National Traffic Safety Board beginning March 2003. He currently is a senior advisor to the National Coalition for Safer Roads.

Commissioner and Council Members, 4/15/2011

My name is Professor Simon Washington. I was recently forwarded a report titled "SAFER STREETS IN LOS ANGELES: Why Engineering Countermeasures Are More Effective than Photo Enforcement in Reducing Red-Light Related Crashes" by Jay Beeber from Safer Streets LA—an interest group that according to their web site is against red light cameras. Prior to providing a critical review this report, I first outline my relevant credentials and abilities.

As a traffic safety engineer, researcher, and professor, I have dedicated my professional life to measuring, understanding, and improving traffic safety on our nation's roadways. Prior to joining the faculty at the Queensland University Centre for Accident Research and Road Safety in Australia—one of the premier road safety research centers in the world, I was Director of the Safe Transportation Research and Education Center (SAFETREC) at the University of California, Berkeley. I have also served on the academic faculties of Arizona State University, the University of Arizona, and the Georgia Institute of Technology. At each of these research intensive institutions I have taught graduate level courses in transportation safety. During this same period I directed over $8 Million in federal, state, and locally supported research on road safety and transportation planning research—including three separate studies evaluating red light and speed cameras in the US. Finally, I have served and continue to serve on matters of road safety on numerous research boards and advisory committees including those at the National Academy of Sciences Transportation Research Board (TRB) and the National Highway Traffic Safety Administration (NHTSA).

Perhaps most relevant to the review of the subject report, I serve on the editorial boards of five peer reviewed journals, three of which focus exclusively on road safety. One of these journals—Accident Analysis & Prevention, is the premier academic journal on road safety in the world. A second journal for which I serve as Associate Editor in charge of transportation safety—the American Society of Civil Engineering Journal of Transportation Engineering—is the oldest running journal in the US. My primary role as editor of these journals is to coordinate the technical reviews of international papers on road safety by authors throughout the world, and to ultimately accept or reject these papers as credible contributions to the road safety profession.

I am significantly concerned by the focused attention being given to a report authored by a member of the public who I understand does not have any expertise in this area and sponsored by an agency that is categorically against red light cameras. Safer Streets LA clearly is not an organization interested in a balanced review of red light cameras. A quick search of the peer-review literature reveals not a single peer review report or paper authored by Jay Beeber—thus the report's author has not established credibility in the road safety profession or been vetted by the professional community.

The introduction of the report uses rather tricky wording to imply that credible agencies have supported the research. If read carefully, the author is saying that the reports reviewed in the course of preparing the paper were conducted and sponsored by credible agencies; however, the report itself does not appear to be sponsored or endorsed by any credible agency such as the ITE or the Texas DOT.

Most of the compelling and conclusive peer reviewed research documenting the benefits of red-light cameras and their effectiveness is conspicuously missing from this report. Ample research has been conducted in the US and abroad documenting the benefits of red light running on reducing crashes; however, the vast majority of this research has been omitted from the report. Two examples of carefully scrutinized national reports are NHTSA's report "Countermeasures that Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 5th Edition, 2010" and the Insurance Institute of Highway Safety's national review of photo enforcement published in ITE, "Two

Decades of Photo Enforcement in the United States: A Brief Summary of Experience and Lessons Learned" (ITE, Vol 80, Issue 11, 20-24). Both of these reports convey an unbiased review of the limitations and benefits of red light cameras deployed in the US, and conclude that the benefits in terms of lives saved and injuries reduced are generally consistent, significant, and reliable.

By focusing solely on engineering countermeasures, the Beeber report ignores the human behavior aspect that cameras are intended to prevent—intentional red light running. Red light cameras are extremely effective at preventing illegal and dangerous behavior, behavior that can lead to serious injuries and death, while engineering countermeasures are not effective at deterring poorly intentioned driver behavior. Another classic example of this is impaired driving, which is difficult or impossible to deter with engineering countermeasures alone; behavioral interventions are needed to effectively combat impaired driving also.

The report suggests that engineering improvements alone such as adjustments to yellow times and all red clearance intervals can sufficiently improve the safety of intersections. This is simply not supported by the evidence. Many competent traffic engineers throughout the US have adjusted signal timing at intersections trying to reduce red-light-running related crashes and violations with positive but limited success. When automated cameras have been installed at these locations with high red light violations, on average the number of associated crashes have been reduced significantly and well beyond those achieved through signal timing enhancements alone.

In conclusion, the non-peer reviewed report by Mr. Beeber attempts to selectively present information and data to discredit the LA photo red light enforcement program and red light camera programs in general. Mr. Beeber has not established credibility in the road safety profession, and the agency he represents clearly takes a biased position on red light cameras. This report would not be used by professional engineers or state departments of transportation to inform critical decisions about the installation or continuation of red light camera programs. Other, widely accepted and peer reviewed reports should be used to inform such decisions. The professional literature and experience in the US and internationally suggests that Red Light Safety Camera programs—properly deployed—increase traffic safety in a meaningful way and ultimately save lives.

Please do not hesitate to contact me if you have further questions,

Sincerely,

Professor Simon Washington (simon.washington@qut.edu.au)
Queensland Transport and Main Roads Endowed Chair of Transport
School of Urban Development, Faculty of Built Environment and Engineering
Centre for Accident Research and Road Safety (CARRS-Q), Faculty of Health
Queensland University of Technology, 2 George St GPO Box 2434
Brisbane Qld 4001 Australia
Tel: +61 7 3138 9990
www.bee.qut.edu.au
www.carrsq.qut.edu.au

National Coalition for Safer Roads

Contact for more information & interview requests:
Stacey Radnor at info@saferoadssavelives.org or 202-870-6668

NATIONAL ROAD SAFETY COALITION CALLS FOR KEEPING RED LIGHT SAFETY CAMERAS IN THE CITY OF LOS ANGELES

Monday, April 4, 2011 – The National Coalition for Safer Roads (NCSR) today called on the City of Los Angeles to continue its highly successful red light safety camera program. NCSR President and Executive Director David Kelly said the program has proven it makes communities safer.

"There is a mounting body of evidence showing red light safety cameras change dangerous driver behavior — saving lives and reducing injuries," said Kelly, who is also the former acting administrator of NHTSA. "L.A. residents and officials just need to look at the local and national results to see the positive effects of these safety programs."

In a February letter to the city's Board of Police Commissioners, Los Angeles Chief of Police Charlie Beck highlighted the "measurable safety improvements" that resulted from the city's Photo Red Light (PRL) Program.

"From January 2004 to December 2009, red-light collisions at PRL intersections have decreased by 63 percent," wrote Beck. "Additionally, there has been an overall decrease of 10 percent in all types of collisions, and no red light related fatalities since program activation (compared to five fatalities in the three years prior to PRL enforcement from January 2004 to December 2006)."

These findings mirror those of a recent national study from the Insurance Institute for Highway Safety. Red light safety cameras helped save more than 150 lives in the 14 biggest U.S. cities from 2004 to 2008, according to IIHS. Had the cameras been operating in all 99 U.S. cities with populations over 200,000, more than 800 lives could have been saved.

David Kelly is NCSR's principal spokesman and representative before state and national policymaking bodies. He is the former acting administrator of NHTSA. President Bush nominated him to the position after Kelly served as the agency's Chief of Staff. He also served as director of the U.S. National Safety Council's Airbag & Seat Belt Campaign.

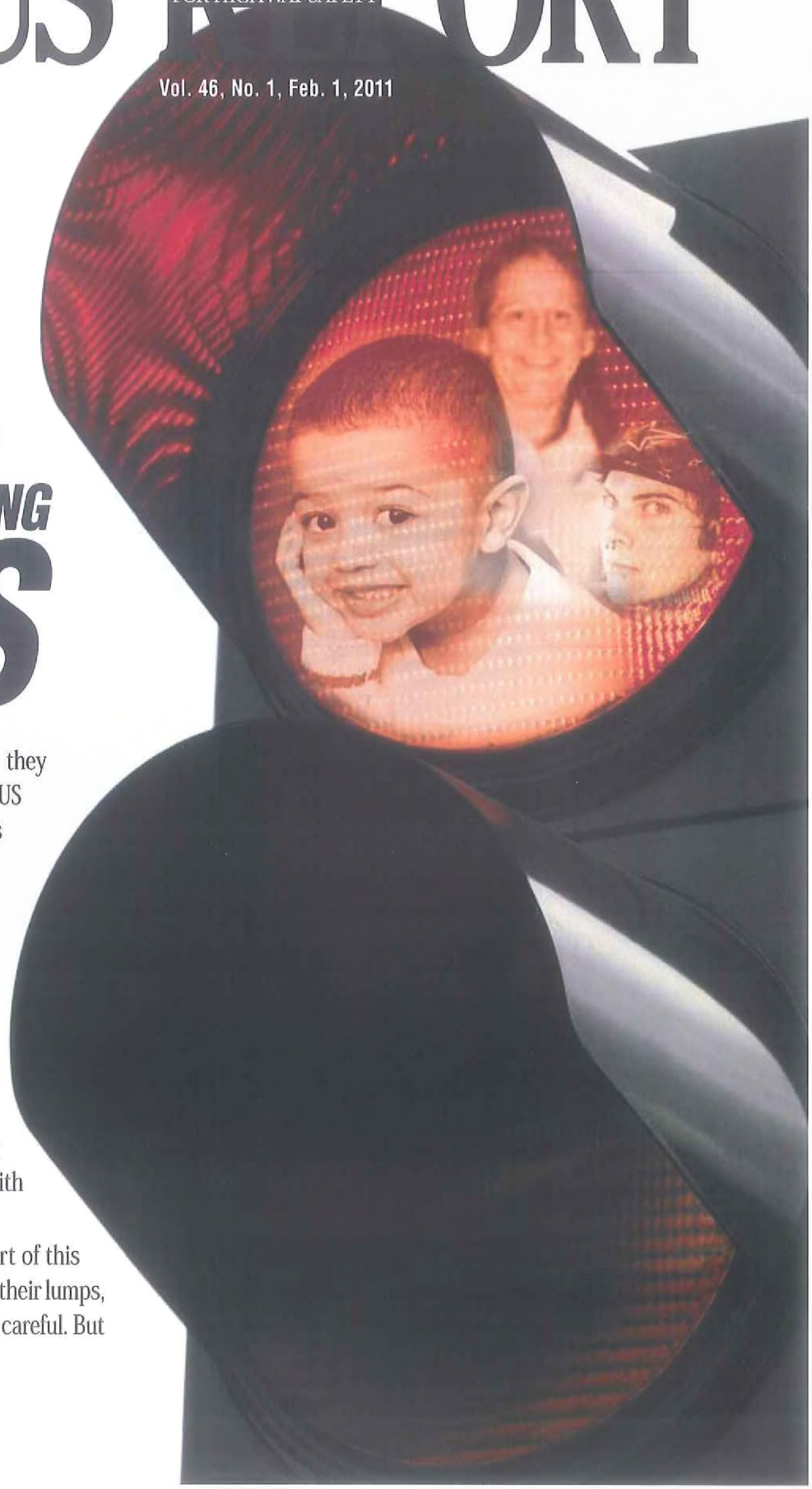
To find more information about improving road safety, visit www.saferoadssavelives.org and follow @SaferRoadsUSA on Twitter and on Facebook at http://www.facebook.com/SaferRoadsUSA.

SPECIAL ISSUE: RED LIGHT RUNNING

STATUS REPORT

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

Vol. 46, No. 1, Feb. 1, 2011



The red light runners think they've been wronged. They're convinced that the cameras documenting their violations are nothing more than a scheme to pick the pockets of motorists. The truth is simpler:

RED LIGHT RUNNING KILLS

and red light cameras save lives. In fact, they saved 159 lives in 2004-08 in the 14 biggest US cities with cameras, a new Institute analysis shows. If cameras had been operating during that period in all cities with populations of more than 200,000, a total of 815 fewer people would have died.

Camera opponents don't acknowledge the connection between those whose red light running sets off a benign flash and those who cause a deadly collision. Instead, they argue about "big brother" and equate fines for violations with taxes on drivers.

Not everyone who runs a red light is part of this group. No doubt, most violators calmly take their lumps, paying their tickets and vowing to be more careful. But

a vocal minority get angry, and their outrage gets broadcast on the internet, magnified by the media, and channeled into campaigns to ban red light cameras on the local or state level. When officials try to assure the public that cameras are about safety, not revenue, they are all but drowned out by the protests of these aggrieved drivers.

"Somehow, the people who get tickets because they have broken the law have been cast as the victims," says Institute president Adrian Lund. "We rarely hear about the real victims — the people who are killed or injured by these lawbreakers."

People like Deborah Parsons-Mason, a California mother of 4 who was fatally hit by a red light runner while crossing the street near her home. Or Marcus May-Cook, who was sleeping in his car seat when a red light runner ended his life after only 3 years. Or Jacy Good, who was permanently disabled and lost both her parents in a red light running crash just hours after her college graduation. The Institute is highlighting their stories and others on these pages to bring the discussion back to the real victims.

Red light running killed 676 people and injured an estimated 113,000 in 2009. Nearly two-thirds of the deaths were people other than the red light running drivers — occupants of other vehicles, passengers in the red light runners' vehicles, bicyclists, or pedestrians.

Since the 1990s, communities have used red light cameras as a low-cost way to police intersections. The number of cities embracing the technology has swelled from just 25 in 2000 to about 500 today.

Without cameras, enforcement is difficult and often dangerous. In order to stop a red light runner, officers usually have to follow the vehicle through the red light, endangering themselves as well as other motorists and pedestrians.

Moreover, the manpower required to police intersections on a regular basis would make it prohibitively expensive. In contrast, camera programs can pay for themselves by requiring people who break the law to shoulder the cost of enforcing it.

"The cities that have the courage to use red light cameras despite the political backlash are saving lives," Lund says. "If they are able to recover some of their traffic enforcement costs at the same time, what's wrong with that?"

Previous research has established that red light cameras deter would-be violators and reduce crashes at intersections with signals. Institute studies of camera programs have found that red light violations fell at intersections where cameras were installed (see *Status Report*, March 7, 1998, Dec. 5, 1998, and Jan. 27, 2007; on the web at iihs.org). In two of those studies, researchers also looked at traffic lights without cameras and found the decrease in violations spilled over from the camera-equipped intersections. In Oxnard, Calif., injury crashes at intersections with traffic signals fell 29 percent citywide after automated enforcement began (see *Status Report*, April 28, 2001; on the web at iihs.org).

The Institute's latest study provides powerful confirmation of the benefits of cameras, showing they reduce deaths throughout entire communities. Looking at US cities with populations *(continues on p. 6)*

Clockwise from left, Jean, Jay, Jared, and Jacy Good

Jacy Good on day of crash

JEAN GOOD AND JAY GOOD, 58

MAIDENCREEK TOWNSHIP, PENNSYLVANIA

Hours after Jacy Good's graduation from Muhlenberg College in Allentown, Pa., she and her parents packed the family's 1989 Oldsmobile station wagon, strapped a sofa to the roof, and headed home to Lititz, a tiny Lancaster County town.

At 21, Good felt on top of the world. She planned to spend a few weeks at home before going to New York, where a job with Habitat for Humanity awaited. Her mother, a middle school English teacher, and her father, a foundry mechanic, were both brimming with pride.

10%

of red light runners in fatal crashes in 2009 were teenagers.

Nearly halfway into their 70-mile trip, a chain-reaction crash set off by a red light runner sent a tractor-trailer into the opposite lane and into their car. Jay Good, who was at the wheel, and Jean Good, who rode in back and wasn't using a safety belt, died at the scene. Jacy Good, who was in the front seat, was left with a traumatic brain injury, partially collapsed lungs, a lacerated liver, 2 damaged carotid arteries, a shattered pelvis, and other injuries.

Weeks later, after she regained consciousness, Good began to learn the details of the crash. The driver of the minivan that sailed through the red light, causing the tractor-trailer to veer into the Goods' station wagon, was 18 years old, had 2 teenage passengers and, according to police, was using his cellphone when the crash occurred. He was cited for careless driving and running a red light and paid $662 in fines and other costs.

Good believes the cellphone was to blame in the May 18, 2008, tragedy. "There's no question in my mind that there would have been no accident if he had not been on his cellphone," she says.

Now 24, Good expects to wear an ankle brace for the rest of her life. She had surgery last summer to recover some function in her limp left arm. Meanwhile, she's become an outspoken campaigner against distracted driving, lobbying lawmakers, appearing on the Oprah Winfrey Show, and addressing high school students. Her activism is in part a way to honor her mother and father's memory, Good says. "I know if the roles were switched, this is what my parents would be doing for me."

BILLY RAY SPENCE, 64
LUBBOCK, TEXAS


Billy Ray Spence

"What're you boys doin'?" That's what Billy Ray Spence, better known as Billy Kool, would say when he walked into a room. And when he did, you knew the party was about to get started. Spence, a heavy equipment operator who moonlighted as a bartender, was a captivating storyteller, jokester, poker player, and briefly married bachelor who lived just down the street from his elderly mother in Lubbock, Texas. He was killed at age 64 while running an errand on the afternoon of Nov. 11, 2008.

His red 1996 Jaguar XJ6 was broadsided by a Ford Explorer whose driver ran a red light.

The driver of the Explorer, Marcelo Perez Jr., 35, was charged with manslaughter. Perez, who tested negative for alcohol and drugs, was no stranger to that intersection: He had been in another crash there just weeks earlier, leading to a charge against him of failing to stop and render aid. Perez died of an unrelated condition before either case could be resolved.

Sandra Johnson says her big brother went off to the Air Force in the 1960s as Billy Spence, but returned as Billy Kool. His name for everyone — or, at least, everyone he liked — was "Ace."

Billy Kool's ability to tell a story made him the life of the party. Johnson says he could captivate an audience of grown men with a card trick or a story about three little bears.

Spence retired, but never stayed that way for long. "He would always say, 'I just want to be home with nothing on but the TV,'" Johnson recalls. "And then when he'd go back to work, he'd say, 'I felt like putting clothes on, so I went back to work.'"

SHANE KIESER, 19
LAS VEGAS, NEVADA

Shane Kieser loved wheels, and he loved adrenaline. When he wasn't racing at the BMX bicycle track, he was often doing stunts in the concrete bowl near his home in Las Vegas. His mother gave him his own insurance card in case she was at work the next time he landed on his face.

When Kieser got a motorcycle, his mother, Terri, wasn't thrilled but she took it in stride. Shane knew the risks and never rode without a helmet.

Early on the morning of Aug. 19, 2008, Kieser and his girlfriend headed to Walmart. They were night owls, says his mother, and "unfortunately, in Vegas everything is open at all hours of the day."

At 5:30 am, Kieser's 1994 Honda CBR slammed into a Toyota Corolla, killing him and injuring his girlfriend. The Corolla's driver wasn't hurt. Police say 3 witnesses saw the motorcycle go through a red light. Terri Kieser says that doesn't square with what she knows about her son.

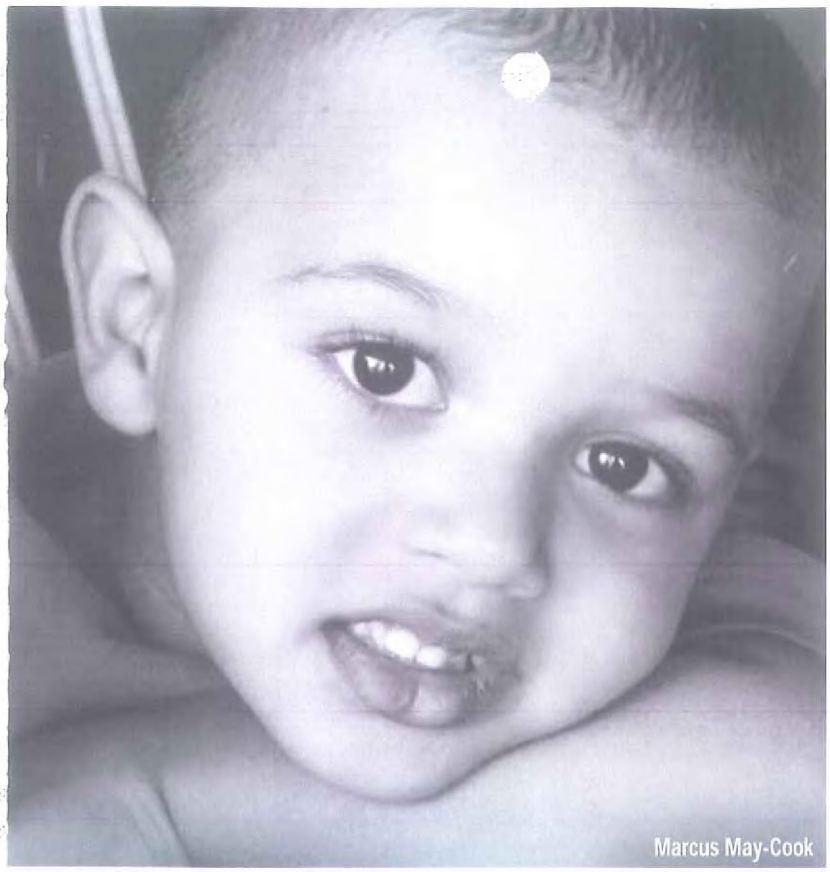
"I was always the first to go, 'What did Shane do?'" she says with a laugh, before turning serious. "But I want to say no. No. Maybe a yellow that he felt he couldn't safely stop at. But running a red with his girlfriend on the back? Never. Shane would never be crazy with somebody else's life."

An aspiring mechanic, Shane was known for his goofy sense of humor. "Birthday parties — the candles were usually up his nose like a walrus," his mother says.

Every year on his birthday, Terri Kieser invites Shane's friends to a nearby mountain where he loved to ride his bike. She brings along homemade waffles — his favorite.


Shane Kieser

11%
of people killed in red light running crashes in 2009 were motorcyclists.



Marcus May-Cook

MARCUS MAY-COOK, 3

LANSING, MICHIGAN

Mindy Cook still can hear her little boy saying, "Mommy, I want you," the way he used to, his arms raised over his head so that she would scoop him up.

Marcus May-Cook was just 3 when he died on Aug. 10, 2008. Two days before, a 17-year-old unlicensed driver broadsided the car Marcus was riding in near his home in Lansing. Police determined that the teenage driver, Brianca Alexander, had gone through a red light. Marcus was asleep when it happened and never woke up.

"I see no end to this grief," Cook wrote in a letter she read at Alexander's sentencing hearing last September, more than 2 years after Marcus' death.

Alexander, who pleaded guilty to driving without a valid license, causing death, was sentenced to 2 ½ to 15 years in prison. Her mother received a year in jail with work release for allowing her daughter, who never had so much as a learner's permit, to take the car.

Marcus was an exuberant little boy who was convinced he would grow up to be Spider-Man. He wore a Spider-Man costume on Halloween — and kept wearing it long after the candy was gone. He even tried to climb the walls like the superhero, knocking over a shelf once in the process.

22%

of red light runners in fatal crashes in 2009 were driving without licenses.

Cook knows that Marcus would have been excited to start kindergarten this past fall. He often imagined heading to school just like big sister Makyla. When their mother packed Makyla's lunch, Marcus insisted on one to carry to his grandmother's house, where he stayed while his mom was at work.

On the Friday of the crash, Marcus and his sister were riding along as their aunt drove their grandmother to her part-time job. Their cousin was in the back seat with them.

Cook was at work when she got the call shortly before 5 pm. When she saw Marcus at the hospital, he didn't look injured, but his brain had been severely damaged. By Sunday, tests confirmed that nothing could save him.

Cook's mother, who was riding in front, had a fractured skull and other injuries. She is no longer able to work. Makyla, who was 6, was injured but recovered. She and her cousin were riding in boosters, while Marcus was buckled in a child restraint.

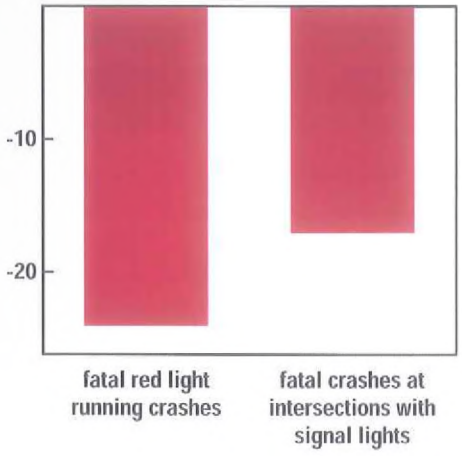
Cook now has another son and says 1-year-old Marrion has begun to recognize his brother in photographs.

"Marcus," says Cook, "is always talked about."

(continued from p. 2) over 200,000, the researchers compared those with red light camera programs to those without. Because they wanted to see how the rate of fatal crashes changed after the introduction of cameras, they compared two periods, 2004-08 and 1992-96. Cities that had cameras during 1992-96 were excluded from the analysis, as were cities that had cameras for only part of the later study period.

Researchers found that in the 14 cities that had cameras during 2004-08, the combined per capita rate of fatal red light running crashes fell 35 percent, compared with 1992-96. The rate also fell in the 48 cities without camera programs in either period, but only by 14 percent.

PERCENT DIFFERENCES IN ACTUAL CRASH RATES DURING 2004-08 IN CITIES WITH RED LIGHT CAMERAS VS. EXPECTED RATES WITHOUT CAMERAS



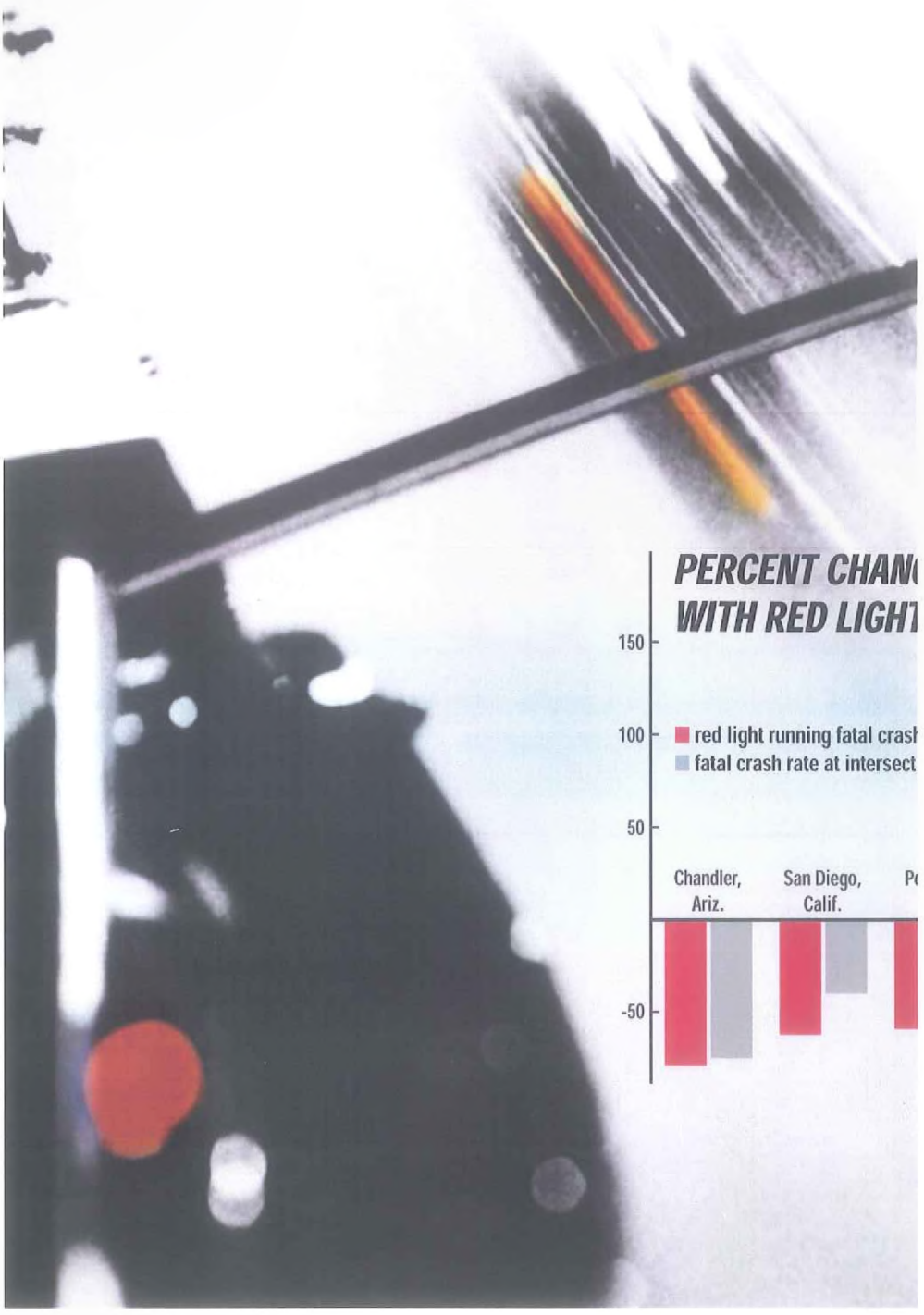
The rate of fatal red light running crashes in cities with cameras in 2004-08 was 24 percent lower than it would have been without cameras. That adds up to 74 fewer fatal red light running crashes or, given the average number of fatalities per red light running crash, approximately 83 lives saved.

That's a substantial benefit, but the actual benefit is even bigger. Red light cameras also reduce fatal intersection crashes that aren't attributed to red light running. One possible reason for this is that red light running fatalities are undercounted due to a lack of witnesses to explain what happened in a crash. Drivers also may be more cautious in general when they know cameras are around.

The rate of all fatal crashes at intersections with signals — not just red light running crashes — fell 14 percent in the camera cities and crept up 2 percent in the noncamera cities. In the camera cities, there were 17 percent fewer fatal crashes per capita at intersections with signals in 2004-08 than would have been expected. That translates into 159 people who are alive because of those automated enforcement programs.

If red light cameras had been in place for all 5 years in all 99 US cities with populations over 200,000, a total of 815 deaths could have been avoided.

"Examining a large group of cities over several years allowed us to take a close look



at the most serious crashes, the ones that claim people's lives," says Anne McCartt, Institute senior vice president for research and a co-author of the study. "Our analysis shows that red light cameras are making intersections safer."

Results in each of the 14 camera cities varied. The biggest drop in the rate of fatal red light running crashes came in Chandler, Ariz., where the decline was 79 percent. Two cities, Raleigh, NC, and Bakersfield, Calif., experienced an increase.

"We don't know exactly why the data from Raleigh and Bakersfield didn't line up with what we found elsewhere," McCartt says. "Both cities have expanded geographically over the past two decades, and that probably has a lot to do with it."

A bigger mystery is why, in the face of mounting evidence that red light cameras make communities safer, some people continue to resist them. Rather than feeling angry at the sight of cameras going off, red light runners should thank their lucky stars they're alive to pay their tickets.

For a copy of "Effects of red light camera enforcement on fatal crashes in large US cities" by W. Hu et al., write: Insurance Institute for Highway Safety, 1005 N. Glebe Rd., Arlington, Va. 22201, or email publications@iihs.org.

CITY USES CAMERAS AS SAFETY TOOL, NOT MONEYMAKER

If the purpose of red light cameras is to raise cash from unsuspecting drivers, officials in Springfield, Mo., did everything wrong.

Before even switching on their cameras in June 2007, traffic engineers reduced red light running by changing the length of yellow lights to make signals consistent across the city. The launch of the cameras was preceded by a major education campaign urging drivers to "respect red," and once cameras were installed their locations were clearly marked. Officials put the cameras at intersections with the biggest traffic volumes to get the message to the greatest number of drivers, though those intersections weren't necessarily where the most violations occurred.

So what happened with that easy money for the budget? Two years and eight months after the cameras were switched on, the program was $33,000 in the red.

Fortunately for the city, making money was never the goal. Improving safety was, and by that measure, the cameras were a success. City officials say their data show red light running crashes decreased both at camera-equipped intersections and citywide. Citations fell 36 percent to an average of 1.05 a day per camera.

Springfield traffic engineer Jason Haynes says the fact that the program didn't make money helped to maintain community support. Another plus was that the vendor operating Springfield's cameras had no vested interest in busting drivers. Instead of paying the company per violation, Springfield paid a flat fee for each camera.

The biggest key to the program's success, says Earl Newman, who recently retired as Springfield's assistant director of public works, is that the city first did all it could from a traffic engineering standpoint to reduce red light running. That meant fixing the yellow timing problem, which the city discovered as it was preparing to install the cameras. The problem stemmed from the fact that some intersections were controlled by the state and others by the city, and the state signals had longer yellow times. There was rampant red light running at the city intersections, perhaps because drivers used to state roads weren't expecting the lights to change so quickly.

Springfield and the state transportation department worked out a compromise, lengthening the yellow phase at many signals and shortening it slightly at others. Only after giving drivers months to get used to the new times did the city switch on the cameras, which led to a further reduction in red light running.

City surveys showed high support for red light cameras, but the program had determined opponents. A legal challenge brought the program to a halt last March, when the Missouri Supreme Court ruled that Springfield's administrative hearing process for contested citations was inadequate.

Haynes says the city's lawyers have come up with a fix and that a new contract for cameras is in the works. But Newman says he's not sure whether the program has much of a future now that violations have fallen so low. Too few citations could mean the red light cameras won't pay for themselves.

"Money is the issue here whether we like it or not," he says. People don't want the cameras to make money, but "as soon as it comes to the point of the taxpayers paying for it, it's a problem again."

HOW RED LIGHT CAMERAS WORK

Cameras like the one at right automatically photograph vehicles whose drivers run red lights. The cameras are connected to the traffic signal and to sensors that monitor traffic flow just before the crosswalk or stop line. The system continuously monitors the traffic signal, and the camera captures any vehicle that doesn't stop during the red phase. Depending on the particular technology, a series of photographs and/or a video clip shows the red light violator prior to entering the intersection on a red signal, as well as the vehicle's progression through the intersection. Tickets typically are mailed to owners of violating vehicles, based on a review of photographic evidence.

QUESTIONS AND ANSWERS ABOUT RED LIGHT CAMERAS

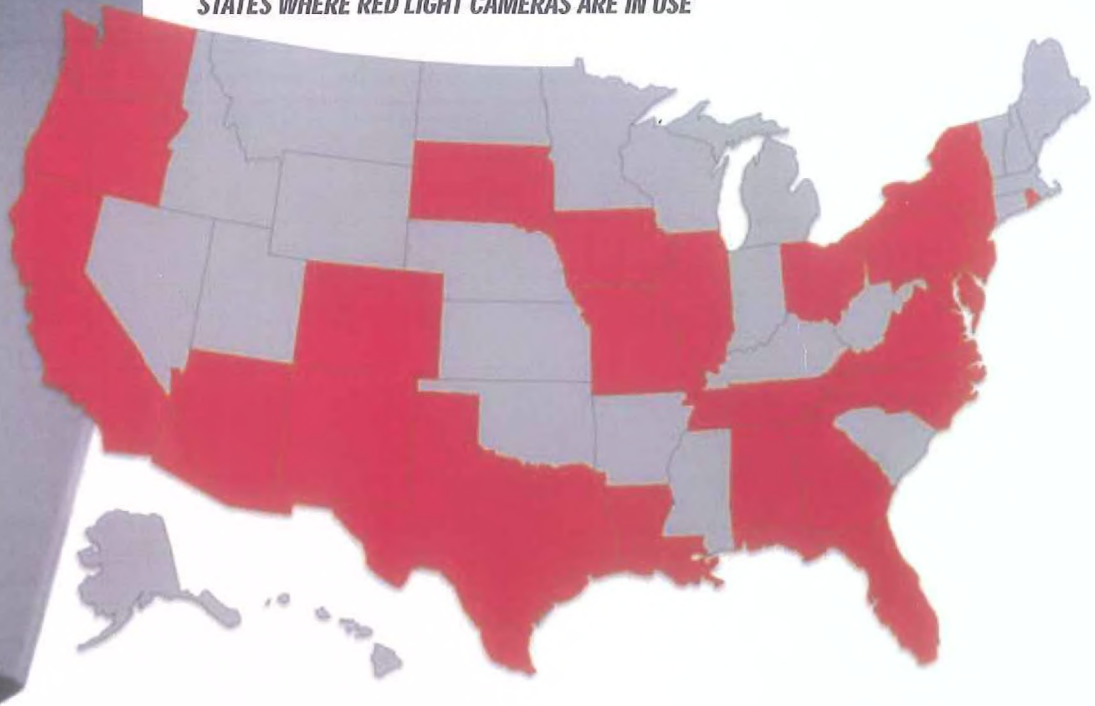
Do red light cameras violate privacy?

No. Driving is a regulated activity on public roads. By obtaining a license, a motorist agrees to abide by certain rules, such as to obey traffic signals. Neither the law nor common sense suggests drivers should not be observed on the road or have their violations documented. Red light camera systems can be designed to photograph only a vehicle's rear license plate, not vehicle occupants, although in some places the law requires a photograph of the driver.

Aren't longer yellow times more effective?

Providing adequate yellow time and a brief phase when all signals are red is important and can reduce crashes but doesn't eliminate the need for, or potential benefits of, red light cameras. An Institute study conducted in Philadelphia, Pa., evaluated effects on red light running of first lengthening yellow signal timing by about a second and then introducing red light cameras. While the longer yellow reduced red light violations by 36 percent, adding camera enforcement further cut red light running another 96 percent.

STATES WHERE RED LIGHT CAMERAS ARE IN USE



Do cameras raise the risk of rear-enders?

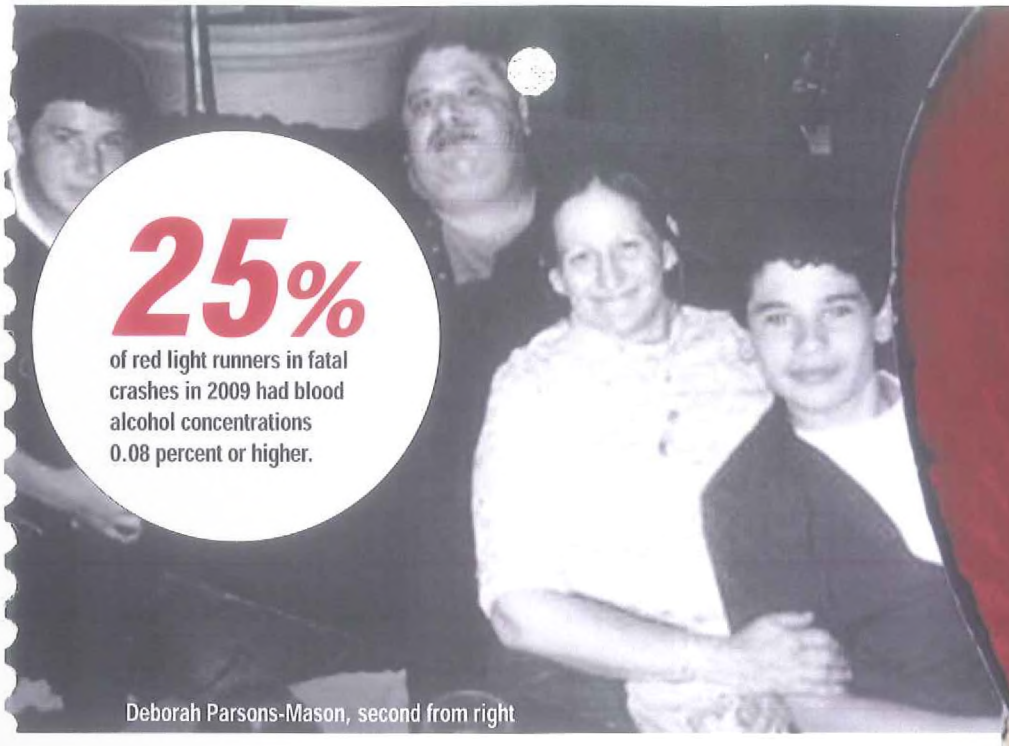
Some studies have reported that while red light cameras reduce front-into-side collisions and overall injury crashes, they can increase rear-end crashes. However, rear-end crashes tend to be much less severe than front-into-side crashes, so the net effect is positive. Moreover, not all studies that have examined rear-end collisions have found an increase.

Are special laws needed for cameras?

Before cameras may be used, state or local laws must authorize enforcement agencies to cite red light violators by mail. The legislation makes the vehicle owner responsible for the ticket. In most cases, this involves establishing a presumption that the registered owner is the vehicle driver at the time of the offense and providing a mechanism for vehicle owners to inform authorities if someone else was driving.

Another option is to treat violations captured by red light cameras as the equivalent of parking tickets. If, as in New York, camera violations are treated like parking citations, the law can make registered vehicle owners responsible without regard to who was driving. The cameras are authorized in about half of US states.

For more questions and answers go to iihs.org/research/qanda/rlr.html.



25%
of red light runners in fatal crashes in 2009 had blood alcohol concentrations 0.08 percent or higher.

Deborah Parsons-Mason, second from right

DEBORAH PARSONS-MASON, 47
SAN JOSE, CALIFORNIA

Deborah Parsons-Mason

Deborah Parsons-Mason worried about walking in her San Jose neighborhood, especially on weekend nights when the nearby bars were full. Drunk driving was a problem in the area, and the family had seen cars totaled just outside their window. The 47-year-old mother warned her 4 kids to use extra caution crossing the street.

But on a Friday 6 days before Christmas 2008, Parsons-Mason would have had her mind on other things. She had just been out shopping, and her mother was flying in the next day.

That night, Parsons-Mason walked to the corner store with her 14-year-old son, Jimmy, to buy some candy bars. On the way home, a pickup truck blew through a red light, striking Parsons-Mason in the crosswalk. As her horrified son watched, she was thrown in the air, landing in her next-door neighbor's driveway. Her husband and her other son heard the crash from inside the house and ran outside to see what had happened.

The driver, Gilberto Vasquez Reyes, 63, had a blood alcohol concentration of 0.21 percent, more than 2 1/2 times the legal limit. He pleaded no contest to vehicular manslaughter but died 5 days before sentencing. He was facing 4 to 6 years in prison.

Parsons-Mason worked as a cashier at Lucky supermarket and was heavily involved in her children's schooling, says her sister Kimberly Sabino. During their own childhood in southern California, Debi, the oldest of 3 girls, was like a second mother, says Sabino, who was the youngest and 5 years her junior.

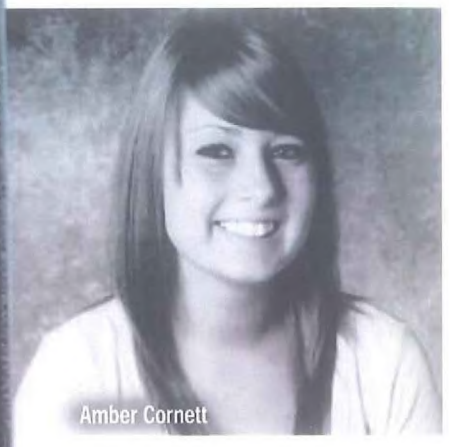
Two years on, the family's grief is still raw. Jimmy constantly replays that night in his head, wishing he had seen the truck coming and pushed his mother out of harm's way, says Parsons-Mason's mother, Diane Courtney.

Sabino says it's hard for her to accept that Reyes, who had several prior convictions for driving under the influence, didn't face a more serious charge than manslaughter. "She wasn't just hit. She was slammed into," Sabino says. "The way my sister was killed was murder."

COMMON THREAD BINDS CRASHES DESPITE DIFFERENT STORY LINES

A comment by Institute president Adrian Lund

The fatal crashes described on these pages are all different, but they have one thing in common: Someone ran a red light. The circumstances of a particular crash may point to a deeper cause, so it's tempting to seek a deeper solution. After all, we know that red means stop. We learned that long before we learned to drive. If people disobey red lights, or simply fail to see them, we assume there's a reason. It must be because they drank too much or they're fiddling with their cellphones or they're inexperienced or reckless drivers. All those things may be true, and many of the underlying causes can and should be addressed. But we can prevent many red light running crashes, regardless of the circumstances, by using cameras to enforce the law. The fact is that the threat of a ticket makes everyone drive more carefully. The data prove it.



Amber Cornett

AMBER CORNETT, 16

BETHEL TOWNSHIP, OHIO

On Nov. 22, 2008, Amber Cornett dutifully called her parents to tell them she was on her way home after spending the night at a friend's house and going out for breakfast.

Cornett was belted in the front seat when the 2003 Chevrolet Cavalier her friend was driving was broadsided by a pickup truck at an intersection in rural Bethel Township in Clark County, Ohio. She was killed just 6 days before her 17th birthday.

Cornett's friend told police she thought she had a green light. The driver and the passenger of the other vehicle insisted their light was green. A third girl who was in the Cavalier's back seat and was injured in the crash couldn't recall approaching the intersection. Police were unable to determine fault and didn't file charges.

"All we really got was no answers," says Mack Cornett, Amber's father. The daughter he lost was "every parent's dream," Cornett says. She was a good student and made friends easily. "I know she was looking forward to getting the chance to get out on her own."

On tribute pages on the web, friends remember Amber's effervescent personality. They lament that she'll never meet their new boyfriends and confide that they can't bear to delete her number from their cellphones.

Mack Cornett has his own way of remembering: The 46-year-old machinist manager keeps in his Bible a picture of Amber with a big smile, taken the summer before she died. Cornett says he's disappointed that neither driver has reached out to say they're sorry. He would be inclined to forgive.

"People run lights. I don't think the majority of people who run them mean to run them. They have distractions," he says.

"How many times have you done something and you got away with it? You look down, you look at your watch, you turn the knob on the stereo, you laugh at a joke — you miss the light."

STATUS REPORT

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

1005 N. Glebe Rd., Arlington, VA 22201
Phone 703/247-1500 Fax 247-1588
Internet: www.iihs.org
Vol. 46, No. 1, Feb. 1, 2011

One family's remembrance

The Insurance Institute for Highway Safety is a nonprofit scientific and educational organization dedicated to reducing deaths, injuries, and property damage from crashes on the nation's highways. The Institute is wholly supported by auto insurers:

AAA Mid-Atlantic Insurance Group
AAA Northern California, Nevada, and Utah
ACE Private Risk Services
Affirmative Insurance
Agency Insurance Company of Maryland
Alfa Alliance Insurance Corporation
Alfa Insurance
Allstate Insurance Group
American Family Mutual Insurance
American National Property and Casualty Company
Ameriprise Auto & Home
Amica Mutual Insurance Company
Auto Club Enterprises
Auto Club Group
Bituminous Insurance Companies
California Casualty Group
Capital Insurance Group
Chubb & Son
Colorado Farm Bureau Mutual insurance Company
Concord Group Insurance Companies
Cotton States Insurance
COUNTRY Financial
Direct General Corporation
Discovery Insurance Company
Erie Insurance Group
Esurance
Farm Bureau Financial Services
Farm Bureau Insurance of Michigan
Farm Bureau Mutual Insurance Company of Idaho
Farmers Insurance Group of Companies
Farmers Mutual of Nebraska
Fireman's Fund Insurance Company
First Acceptance Corporation
Florida Farm Bureau Insurance Companies
Frankenmuth Insurance
Gainsco Insurance
GEICO Group
Georgia Farm Bureau Mutual Insurance Company
GMAC Personal Lines Insurance
Grange Insurance
Hanover Insurance Group
The Hartford
Haulers Insurance Company, Inc.
High Point Insurance Group
Homeowners of America Insurance Company
Horace Mann Insurance Companies
ICW Group
Imperial Fire & Casualty Insurance Company
Infinity Property & Casualty
Kemper, A Unitrin Business
Kentucky Farm Bureau Insurance
Liberty Mutual Insurance Company
Louisiana Farm Bureau Mutual Insurance Company
Mercury Insurance Group
MetLife Auto & Home
MiddleOak
Mississippi Farm Bureau Casualty Insurance Company
MMG Insurance
Mutual of Enumclaw Insurance Company
Nationwide
New Jersey Manufacturers Insurance Group
NLC Insurance Companies, Inc.
Nodak Mutual Insurance Company
Norfolk & Dedham Group
North Carolina Farm Bureau Mutual Insurance Company
Oklahoma Farm Bureau Mutual Insurance Company
Old American County Mutual Fire Insurance
Oregon Mutual Insurance
Palisades Insurance
Pekin Insurance
PEMCO Insurance
Progressive Corporation
Rockingham Group
Safeco Insurance
Samsung Fire & Marine Insurance Company
SECURA Insurance
Sentry Insurance
Shelter Insurance
Sompo Japan Insurance Company of America
South Carolina Farm Bureau Mutual Insurance Company
Southern Farm Bureau Casualty Insurance Company
State Auto Insurance Companies
State Farm
Tennessee Farmers Mutual Insurance Company
Texas Farm Bureau Insurance Companies
Tokio Marine Nichido
The Travelers Companies
United Educators
Unitrin
USAA
Viceroy Insurance Company
Virginia Farm Bureau Mutual Insurance
West Bend Mutual Insurance Company
Young America Insurance Company
Zurich North America

FUNDING ASSOCIATIONS
American Insurance Association
National Association of Mutual Insurance Companies
Property Casualty Insurers Association of America