

Automated Enforcement Systems: Synthesis

**Prepared for
Ted Trepanier, Co-Director, WSDOT Traffic and Operations Division**

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Transportation Synthesis Reports (TSR's) are brief summaries of currently available information on topics of interest to WSDOT staff. Online and print sources may include newspaper and periodical articles, NCHRP and other TRB programs, AASHTO, the research and practices of other state DOT's and related academic and industry research. Internet hyperlinks in the TSR's are active at the time of publication, but host server changes can make them obsolete.

Request for Report

Summary of the Issue:

Ted Trepanier, State WSDOT State Traffic Engineer, requested a synthesis of automated enforcement techniques to meet the requirements of 2007 legislation to implement automated enforcement in workzones. Information on automated enforcement in intersections is also included.

From the Illinois experience, the following items are needed for automated workzone enforcement:

- Better defined work zones—projects on multi-lane highways have signs better identifying the appropriate speed in a particular work zone and also when it is safe to resume normal speed.
- Modified driver education curriculum—A compact disc and teaching manuals have been mailed to more than 1,500 high schools and private driver education facilities.
- New Signage—A new sign has been developed and is being placed at projects throughout the state publicizing work zone related penalties, “Hit a worker, \$10,000 fine, 14 years in jail”.
- Enhanced use of stationary and portable changeable message boards in and around work zones.
- More consistent looking work zones.
- Remote controlled flaggers—IDOT is using federal research funds to test 20 newly developed remote flagger workstations.
- “Trooper in a Truck”—allowing state police to covertly enforce speed limits, out-of-uniform and in IDOT trucks.
- Trooper Hire-back—\$4.7 million has been identified to fund additional troopers in work zones throughout the state. Additional troopers allow state police to deploy work zone details in areas of heightened concern.

Key Terms searched:

Automated traffic enforcement
Red light camera enforcement
Automated traffic enforcement intersections
Automated traffic enforcement work zones
Automatic traffic camera violation data
Work zone camera speed enforcement
Benefit/cost of automated camera enforcement systems
Literature Review

Automated Enforcement: A Compendium of Worldwide Evaluations of Results

US DOT National Highway Traffic Safety Administration, July 2007

The U.S. Department of Transportation's National Highway Traffic Safety Administration has released a report that explores automated enforcement systems implemented around the world and characterizes the safety impacts of such deployments.

<http://www.nhtsa.dot.gov/staticfiles/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/HS810763.pdf>

1

TI: Traffic Conflict Studies Before and After Introduction of Red-Light Running Photo Enforcement in Maine.

AU: Garder-Per

CA: University of Maine, Orono, Department of Civil and Environmental Engineering, 5711 Boardman Hall, Orono, ME, 04469, USA; New England University Transportation Center, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA, 02139, USA
SO: 2006/08/29. September 2004 - August 2005 59p (6 Phot., 27 Fig., 25 Tab., 4 Ref.)
PY: 2006

[Online version not available – contact the library to borrow a copy]

AB: Red-light running is a major safety concern in Maine. It can probably best be reduced by enforcement. This pilot study uses crash data, traffic conflict data, video and field observations of behavior to evaluate the potential effectiveness of photo enforcement in Lewiston and Auburn in Maine. The intent of the pilot study was to demonstrate the need for photo enforcement, to show that it can work in Maine, and to help the legislators make informed, educated decisions on legislation affecting this program, which may include a shift in policy to allow photo-enforcement activities. The ultimate purpose of the activity is to improve safety at intersections, thereby reducing fatalities and injuries. Five signalized intersections in Lewiston-Auburn were outfitted with photographic equipment in the pilot study, which was funded by the Federal Highway Administration, Maine Department of Transportation and the Androscoggin Transportation Resource Center. The equipment vendor operated and maintained the equipment, and viewed photographic images to insure quality. The respective Lewiston or Auburn police departments reviewed each potential violation to determine whether a red light violation had occurred, and issued warning letters to the registered vehicle owners of the offending vehicles. The police were conservative when determining if a red light violation had occurred - likely more violation warning letters could have been issued. Even with some periods with the systems inoperable and the conservative approach, over 4,600 warning letters were issued during the six-month pilot project, resulting in an average of over 5 violations per day for each intersection, proving that red light running is indeed a major problem. For a variety of reasons, the system was not operating 100% of the time. Still, it was shown that automatic enforcement can be used even during Maine's severe winter conditions. The effectiveness could be further improved with a careful maintenance program. A system that catches only 50% of all offenders would be about 2000 times more effective than today's enforcement level. A question that has been addressed through this study is whether automatic enforcement, using video and digital camera technology, effectively can

reduce red-light running frequencies even if violations only result in warning letters. (Maine law currently does not allow issuing citations based on photographic evidence, so only warning letters were issued to violators.) Observations of red-light running indicate that the violation rate dropped by around 28% between December 2004 (when the system was first installed) and May 2005, when the system had been operational for several months. But it was the infractions that occurred at low speeds and within the first second or so that were reduced. Infractions more than 3 seconds into red and at speeds above 35 mph actually increased. However, it is unlikely that the enforcement system in any way led to this increase in the more serious infractions. It is possible that weather and roadway conditions explain the higher speeds during the later months. Future studies should address that. Conflict and crash data indicate that there were no great improvements in safety between the before period and the period when the system was in operation. Actual fines rather than warning tickets may have produced greater safety effects.

2

TI: ***Speed Cameras: An Effectiveness and a Policy Review.***

AU: Willis-David-K

CA: Texas Transportation Institute, Center for Transportation Safety, Texas A&M University, College Station, TX, 77843-3135, USA

SO: 2006/05. 19p (2 Tab., Refs.)

PY: 2006

<http://tti.tamu.edu/documents/TTI-2006-4.pdf>

AB: The objective of this research was to: review what the research literature has to say about the role of illegal speed in traffic crashes; examine the role of speed cameras in reducing speeding; examine the safety effectiveness of speed cameras; and illuminate implementation issues that can "make or break" a speed camera program by gaining public acceptance for, or generating fierce public opposition to, photographic enforcement of speed limits. The report concludes that speeding enhances crash risk and severity and that speed cameras reduce both speeding and crash severity. Implementation issues, however, are highly problematical, and a poorly implemented automated speed enforcement program can easily undermine public support.

3

TI: ***Identifying Intersections with Potential for Red-Light-Related Safety Improvement.***

AU: Bonneson-James-A; Zimmerman-Karl-H

CA: Transportation Research Board, 500 Fifth Street, NW, Washington, DC, 20001, USA

SO: Conference Title: Transportation Research Board 85th Annual Meeting. Location: Washington. Sponsored by: Transportation Research Board. Held: 20060122-20060126. 2006. 21p (4 Fig., 4 Tab., 17 Ref.)

PY: 2006

http://www.mdt.mt.gov/research/docs/trb_cd/Files/06-1667.pdf

AB: The problem of red-light-running is widespread and growing; its cost to society is significant. However, the literature is void of quantitative guidelines that can be used to identify and treat problem locations. Moreover, there has been concern voiced over the validity of various methods used to identify problem locations, especially when automated enforcement is being considered. This paper documents the development of a procedure for identifying and ranking intersection approaches with the potential for improvement in the area of red-light-related crashes. One component of this procedure is a safety prediction model. A sensitivity analysis of this model indicates that red-light-related crashes decrease with an increase in yellow interval duration and a reduction in speed limit.

4

TI: ***Traffic Safety and Public Health: State Legislative Action, 2005.***

AU: Savage-Melissa-A; Sundeen-Matt; Mejeur-Jeanne

CA: National Conference of State Legislatures, 7700 East First Place, Denver, Colorado, 80230-7143, USA

SO: 2005/12. 68p (Tabs., Refs., 10 App.)

PY: 2005

<http://www.ncsl.org/print/transportation/2005trafficsafety.pdf>

2006 edition: <http://www.ncsl.org/print/transportation/06trafficsafety.pdf>

AB: This report presents a summary of the bills regarding traffic safety that were considered by state legislatures during the 2005 legislative sessions. It also provides information about up to date traffic safety issues. Topics listed in the table of contents include: occupant protection; distracted driving; driver's licensing; speed limits; automated enforcement; Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU); impaired driving; aggressive driving; pedestrian safety; motorcycle helmets; bicycle safety; and school bus safety.

5

TI: ***The National Safety Camera Programme: Three-Year Evaluation Report.***

AU: Gains-Adrian; Heydecker-Benjamin; Shrewsbury-John; Robertson-Sandy

CA: PA Consulting Group; University College, London. Centre for Transport Studies

SO: 2004. pp114

PY: 2004

http://www.dft.gov.uk/pgr/roadsafety/speedmanagement/nscp/nscp/coll_thenationalsafetycameraprog/thenationalsafetycameraprogr4600

AB: This report updates a research report from 2003 which analyzed the effectiveness of a system that allowed eight pilot areas in the U.K. to recover the costs of operating speed and red-light cameras (safety cameras) from fines resulting from enforcement. This report updates this analysis to a total of 24 areas that were operating within the programme over the first three years (April 2000 to March 2003). The report focuses on four areas: 1) the impact that cameras have had on vehicle speed, 2) the impact the cameras have had on collisions and casualties, 3) an assessment of public awareness, and 4) costs and benefits of the program to date. The report concludes that the safety cameras cost recovery program was considered to be a success if there was a significant reduction in speed and casualties at camera sites general public acceptance of the road safety benefits, and satisfactory working of the funding and partnership arrangements.

6

TI: ***Traffic Signal Safety Strategies: Analysis of Red-Light Running in Maine.***

AU: Garder-P

CA: University of Maine, Orono, Department of Civil and Environmental Engineering, Orono, ME, 04469, USA; New England University Transportation Center, Massachusetts Institute of Technology, Cambridge, MA, 02139-, USA

SO: 2004/05/24. 0109-0208 pp100 (1 Fig., 48 Tab., Refs., 5 App.)

PY: 2004

<http://www.maine.gov/mdot/transportation-research/pdf/report0111f.pdf>

AB: The aim of this report is to suggest how to make signalized intersections safer, in particular in respect to crashes caused by red-light violations. The report includes a review of literature, analysis of crashes, and interviews with Maine drivers. One conclusion is that the drivers are completely unaware that there was a red light in about a quarter of the crashes caused by red-light running violations. One way of improving the safety of the location may be to replace it with a modern roundabout. Another conclusion is that signalized intersections should be vehicle actuated if possible or else coordinated with nearby signals. More enforcement by police or automatic surveillance are considered by the public the most effective ways to reduce red-light running. Finally, the most important factor in reducing red-light running frequency, as well as the number of serious crashes caused by red-light running, is never having a posted speed limit greater than 35 mph through a signalized intersection.

7

TI: ***Unclogging Arterials: Prescriptions for Relieving Congestion and Improving Safety on Local Roadways.***

CA: Public Technology, Incorporated, 1301 Pennsylvania Avenue, NW, Washington, DC, 20004, USA; Federal Highway Administration, Office of Operations, 400 7th Street, SW, Washington, DC, 20590, USA

SO: 2003. pp76 (Photos., 1 Tab., Refs., 6 App.)

PY: 2003

[Online version not available – contact the library to borrow a copy]

AB: Because arterial roadways handle a growing share of traffic, effective arterial management strategies play a critical role in congestion relief. In fact, arterial roadways need the most management, because they perform the dual function of serving through traffic and providing access to abutting properties. Some of the management options in this guidebook involve Intelligent Transportation Systems (ITS) technologies, road condition sensors, automated traffic signals, changeable message signs, and video surveillance cameras. The interstate highways surrounding most major metropolitan areas in the United States are served by ITS technologies that state highway departments have installed within the last decade. ITS is still relatively rare on arterial roadways. Some ITS technologies may be too expensive for many local governments to consider, but some are within reach, and all eventually will yield major benefits for a community. In this document, some specific strategies for unclogging a community's arterial traffic flow are discussed in detail, including signal timing, signal coordination and interconnection, cross-jurisdictional coordination, adaptive signal control systems, freeway/arterial coordination, access management, bus rapid transit, regional incident management partnerships, event management, construction work zone management, automated enforcement, transportation demand management, arterial/rail grade crossings, transit and emergency vehicle signal priority, and footing the high-tech bill. Case studies are presented and an action checklist is provided.

8

TI: ***Compilation of State Laws and Regulations on Matters Affecting Highway-Rail Crossings, Third Edition.***

CA: Federal Railroad Administration, 400 7th Street, SW, Washington, DC, 20590, USA

SO: 2003.

PY: 2003

<http://www.fra.dot.gov/us/content/806>

AB: This Third Edition of "Compilation of State Laws and Regulations on Matters Affecting Highway-Rail Crossings" provides an up-to-date and more expansive look at the various state laws and regulations concerning driver behavior at highway-rail grade crossings, as well as a compilation of laws and regulations concerning trespassing on railroad rights of way and equipment, and vandalism to railroad property and equipment; and for the first time, a look into the various state laws concerning photographic enforcement of traffic laws. In this edition, the laws and regulations of all fifty states and the District of Columbia are compiled into one comprehensive, easy-to-use document. This book is intended to provide a one-stop initial reference for researchers, engineers, students and legal practitioners, and those who make their living working in the field of highway-rail crossing safety. As with both the first and second editions, published in 1983 and 1995, respectively, this document is intended to be useful in assessing differences and similarities among states, in seeking desirable and undesirable laws and in conducting legal research. The Uniform Vehicle Code (UVC) is appended to this edition. Since it was first published in 1926, the UVC has provided a comprehensive guide to states as they developed their motor vehicle laws. It is included here for use in comparing existing state laws to the UVC.

9

TI: ***Executive Summary Report: Pilot Study of Automated Red Light Enforcement.***

AU: Turner-DS; Supriyasilp-T

CA: University of Alabama, Tuscaloosa, Department of Civil and Environmental Engineering, Box 870205, Tuscaloosa, AL, 35487-0205, USA; University Transportation Center for Alabama, University of Alabama, Tuscaloosa, P.O. Box 870205, Tuscaloosa, AL, 35487-0205, USA

SO: 2003/12/31. 0201-0312 pp15 (1 Fig., 1 Tab., Refs., 1 App.)

PY: 2003

http://utca.eng.ua.edu/projects/final_reports/00470-3rpt.pdf

AB: This Executive Summary Report presents the primary procedures and key findings of a red light running (RLR) investigation. 47,501 such crashes occurred in Alabama over a nine-year period, producing 16,306 injuries and fatalities. A RLR camera system installed in Tuscaloosa

during this project confirmed the extent of the problem. It detected 13,647 violations out of 2,726,061 vehicles observed (about one out of every 200 vehicles). The RLR camera system stored the data on a Web site, where it was available to the research team and City of Tuscaloosa officials. The researchers investigated how the camera system operated, verified its accuracy, evaluated data taken at three intersections, and established the system's cost effectiveness in reducing both RLR and RLR-related crashes. The system was found to be highly effective, and the researchers made the following recommendations: An Alabama oversight committee should be formed to encourage adoption of RLR camera programs; Legislation should be pursued in Alabama to enable automated enforcement of RLR; In selecting sites for RLR cameras, the primary criteria should be crash history, violation history, opinions of local traffic engineers and law enforcement officials, and similar factors; Revenues collected from RLR camera citations should be distributed according to the provisions proposed in Alabama House Bill 683, introduced in the 2001 Legislature; and If excess revenues (beyond the cost of the RLR camera program) are generated, they should be dedicated to safety and road projects in the host city. The research staff strongly encourages the adoption of automated enforcement of RLR in Alabama, as a safety countermeasure to mitigate the approximately 5,278 RLR collisions that occur each year, and to reduce the approximately 1,812 Alabama citizens injured and killed each year in these collisions.

10

TI: ***Legislative Issues Related to Automated Enforcement of Red-Light Running.***

AU: Kraus-E; Quiroga-C

SO: Transportation Research Record. 2003. (1830) pp48-55 (1 Tab., 57 Ref.)

PY: 2003

<http://trb.metapress.com/content/526t5kr81727q792/fulltext.pdf>

AB: Red-light running is one of the leading causes of crashes in urban areas in the United States. A number of strategies are available to address this problem, including engineering countermeasures, educational campaigns, and improved law enforcement. Law enforcement agencies are increasingly relying on automated systems using photographic devices to enforce red-light-running laws. While automated enforcement systems appear to have wide public support, there is considerable confusion among drivers, engineers, planners, and decision makers as to the legality and constitutionality of those systems. The debate is particularly acute when it comes to issues such as privacy, use of information, and constitutional rights. These issues are analyzed and legal strategies are compared in states that have passed or attempted to pass legislation to regulate automated enforcement. The analysis highlights differences among states depending on their statutory laws and whether red-light violations are treated as civil or criminal offenses. The analysis reveals major differences in the way states legislate program details, which, in turn, affect program implementation. Also included is a review of current European red-light-running legislation, where automated enforcement systems have a longer history than in the United States.

11

TI: ***Managing Automated Enforcement Programs.***

AU: Flechtner-JR

CA: Institute of Transportation Engineers, 1099 14th Street, NW, Washington, DC, 20005-3438, USA

SO: Conference Title: Institute of Transportation Engineers (ITE) 2003 Technical Conference and Exhibit. Location: Fort Lauderdale, Florida, USA. Sponsored by: Institute of Transportation Engineers. Held: 20030323-20030326. 2003/03. pp8

PY: 2003

[\[Online version not available – contact the library to borrow a copy\]](#)

AB: For automated enforcement programs to be effective and efficient, agencies need to actively promote and control them from start-up through maturity. Developing distinct management and promotional objectives helps ensure red light camera programs provide value throughout their life cycles. The City of Wilmington, N.C. SafeLight program, which was launched in March 2000, shows that a creatively run program can reduce collisions and injuries, enjoy public support, and

fund traffic safety initiatives. Beyond improving safety at signalized intersections, automated enforcement programs also offer municipalities a variety of opportunities to educate motorists about the dangers of aggressive driving. The City promotes SafeLight to the public through annual reports, programs on the City television channel, billboards, regular press releases, and a popular 'photo of the week' segment on a television news program. Creative marketing and frequent safety messages through various distribution channels help SafeLight enjoy strong public support - 85% of Wilmington, N.C. residents believe the program is beneficial to the community. SafeLight also generates significant revenue for the City. It funds visible safety initiatives such as intersection improvements and neighborhood traffic calming. This helps bolster public support as motorists understand that SafeLight benefits Wilmington in two ways - fewer collisions and new safety projects.

12

TI: FHWA Addressees Crashes at Rail Crossings but Misses the Potential of Cameras to Reduce Gate Signal Violations.

SO: Status Report. 2003/03/15. 38(3) pp7 (1 Phot.)

PY: 2003

[\[Online version not available – contact the library to borrow a copy\]](#)

AB: A new document produced by the Federal Highway Administration suggesting ways to better maintain the separation between cars and trucks and trains at railroad crossings contains numerous suggestions about engineering and markings, but does not include the possible use of automated cameras to enforce rules against unauthorized crossings at automated gates. This type of crossing, commonly at the busiest intersections, accounts for about 30 percent of all crashes at railroad crossings. About half of all the crashes were blamed on the driver trying to go around the gate or failing to stop. A pilot study of camera enforcement at two crossings in Los Angeles showed that cameras cut violations 92% and 78% within a few months.

13

TI: Enforcement Issues on Managed Lanes.

AU: Cothron-AS; Skowronek-DA; Kuhn-BT

CA: Texas Transportation Institute, Texas A&M University, College Station, TX, 77843-3135, USA; Texas Department of Transportation, Research and Technology Implementation, P.O. Box 5080, Austin, TX, 78763-5080, USA; Federal Highway Administration, 400 7th Street, SW, Washington, DC, 20590, USA

SO: 2003/01. 0109-0208 pp48 (3 Fig., 3 Tab., 12 Ref., 1 App.)

PY: 2003

<http://tti.tamu.edu/documents/4160-11.pdf>

AB: This report provides an overview of enforcement issues for operating freeways with managed lanes. The term "managed lanes" encompasses a variety of facility types, including high-occupancy vehicle (HOV) lanes, high-occupancy toll (HOT) lanes, single-occupancy vehicle (SOV) express lanes, special-use lanes, and truck lanes. The role of enforcement is explored through identifying the available enforcement strategies and elements of enforcement area design. The state-of-the-practice for managed lane enforcement at various locations around the country gives insight of items to consider when developing an effective enforcement program. Lastly, this report acknowledges managed lane enforcement is becoming ever more dependent on technological advancements in presenting innovations in the area of automated enforcement technology, specifically, automated vehicle identification (AVI), license plate recognition (LPR), and electronic toll collection (ETC).

14

TI: Impact of Red Light Camera Enforcement on Crash Experience.

AU: McGee-HW; Eccles-KA

SO: NCHRP Synthesis of Highway Practice. 2003. (310) pp63 (5 Fig., 28 Tab., Refs., 2 App.)

PY: 2003

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_310.pdf

AB: This report of the Transportation Research Board will be of interest to local, regional, state, and federal officials, as well as to other transportation professionals and the public who work with them in the area of traffic engineering. This report examines what impact red light running camera enforcement has had on crashes and related crash severity at intersections. No new data collection or analysis was performed. The information base came from published literature, various websites, and from responses to a questionnaire distributed to those jurisdictions known or believed to have installed red light running camera systems. Based on the information acquired and reviewed for this effort, it appears that red light running automated enforcement can be an effective safety countermeasure. However, there is currently insufficient empirical evidence based on statistically rigorous experimental design to state this conclusively.

15

TI: ***Feasibility of Automated Traffic Signal Enforcement in Kansas.***

AU: Stokes-RW; Russell-ER; Rys-MJ

CA: Kansas State University, Manhattan, 2123 Fiedler Hall, Manhattan, KS, 66506-2905, USA; Kansas Department of Transportation, Bureau of Materials and Research, 2300 Southwest Van Buren Street, Topeka, KS, 66611-1195, USA

SO: 2003/02. 0006-0301 pp64 (1 Tab., Refs., 1 App.)

PY: 2003

[\[Online version not available – contact the library to borrow a copy\]](#)

AB: The overall objective of this study is to evaluate the feasibility, effectiveness, legality, and public acceptance aspects of automated traffic signal [red light running (RLR)] enforcement in Kansas. The results of the study could be used as the basis for pursuing legislative changes to allow the use of automated traffic signal enforcement in Kansas. This objective was accomplished by conducting a review of the literature, interviewing representatives from cities with experience in the use of automated traffic signal enforcement programs, reviewing applicable laws in other states, and analyzing data from pilot RLR studies conducted by the cities of Overland Park and Olathe, Kansas. Based on evidence from RLR programs in the United States, and preliminary results from RLR pilot studies currently underway in Olathe and Overland Park, it is the recommendation of this study that the implementation of an automated RLR enforcement program for Kansas should be pursued. The basic recommendation of this study is that the Kansas Department of Transportation proceed with the development of a plan for implementing an RLR enforcement program for Kansas, as discussed in detail in Chapter 5 of this report. To guide the development of the implementation plan, the Department should consider establishing an advisory/steering committee with representation from the various stakeholder groups enumerated in Chapter 5 of this report. It is recommended that the implementation plan pay special attention to the public acceptance and public education aspects of RLR programs (discussed in Chapters 4 and 5 of this report). In addition, the implementation plan should advocate a "balanced approach" incorporating elements of engineering, education, and enforcement (the "3E" principles) to address the RLR problem in Kansas. Specifically, the implementation plan should emphasize that in addition to automated enforcement, "traditional" engineering solutions (e.g., dilemma zone analysis, evaluation of signal timings and clearance intervals) to the RLR problem will be evaluated. Finally, the Department should continue to actively monitor the Overland Park and Olathe pilot studies as part of the development of the recommended implementation plan.

16

TI: ***Red Light Running – A Policy Review.***

AU: Quiroga-C; Kraus-E; van-Schalkwyk-I; Bonneson-J

CA: Texas Transportation Institute, Texas A&M University, College Station, TX, 77843-3135, USA

SO: 2003/03. 0202-0210 pp98 (Figs., Tabs., Refs.)

PY: 2003

<http://ntl.bts.gov/lib/13000/13000/13061/cts-02.pdf>

AB: There are more than 100,000 red light running crashes per year in the U.S., resulting in some 90,000 people injured and 1,000 people killed. More than half of red light running-related fatalities

are pedestrians and occupants in other vehicles who are hit by red light runners. Texas is a leading state in red light running fatalities. From 1992 to 1998, Texas ranked second in the number of red light running fatalities, with 11% of the national total. Even after relating the numbers to population, Texas ranked very high--fourth place nationwide--with a rate of 3.5 fatalities per 100,000 people in that period. The cost of red light running injuries and fatalities in Texas is between 1.4 and 3.0 billion dollars per year. This report includes an assessment of factors affecting red light running, a review of red light running trends in the U.S. and in Texas, and an evaluation of the effectiveness of strategies to deal with the problem, including engineering countermeasures, automated enforcement, and educational and awareness programs. The report also includes a series of policy recommendations that, together, should provide useful guidance to transportation officials, legislators, and law enforcement agencies. The recommendations include strategies to define measurable goals and objectives, as well as guidelines for the implementation of engineering countermeasures, improved enforcement, enabling legislation, and educational and public awareness programs. Following similar findings in the literature, the report recommends documenting the extent of the red light running problem and quantifying the impact of red light running crashes, injuries, and fatalities, both in statistical terms and in dollar terms, as a first step in the identification of appropriate solution strategies. The process should then continue with the evaluation and implementation of engineering countermeasures followed, as needed, by the evaluation and implementation of improved enforcement.

17

TI: ***Automated Enforcement: Who Uses It?***

AU: Stidger-RW

SO: Better Roads. 2003/01. 73(1) pp15 (1 Phot.)

PY: 2003

[\[Online version not available – contact the library to borrow a copy\]](#)

AB: This article presents a summary of which states are using some form of automated enforcement as reported by the Insurance Institute for Highway Safety and the Highway Loss Data Institute. Most automated enforcement is directed at red light running and speeding. In red light enforcement, a camera takes two photographs, usually, first when the vehicle crosses a pre-designated stop line and a second when the vehicle is in the intersection. Some cameras can capture the driver; all capture the license plate. The photo is date stamped, along with the location, the speed of the vehicle (if it's speed enforcement) and, if it's red light enforcement, the length of time from which the light turned red. Arizona has no state laws, though two cities use red light and speed cameras. California uses cameras for red lights and illegal rail crossings. Delaware, Georgia, Maryland, North Carolina, Ohio and Washington use them only for red lights. The District of Columbia uses them for moving violations. Utah uses them for speeding in certain areas, around schools and where the posted speed is 30 mph or less. New York allows cities of 1 million or more to use them on up to 50 intersections per city; Oregon allows cities with more than 30,000 to use it, though under 300,000 population, they are limited to four intersections each. Larger ones are limited to eight. Virginia has an automatic repeal in 2005, and Washington has four pilot projects. Sanctions vary widely, with some states putting violations on driving records and others limiting the penalty to fines.

18

TI: ***Crash Reduction Due to the Installation of Red Light Cameras: Guidelines for Site Selection. In: Compendium: Papers on Advanced Surface Transportation Systems, 2002.***

AU: Hogue-NL; Dudek-CL (Editor)

CA: Texas Transportation Institute, Texas A&M University, College Station, TX, 77843-3135, USA; Southwest Region University Transportation Center, Texas Transportation Institute, Texas A&M University, College Station, TX, 77843-3135, USA

SO: 2002/08. pp61-82 (4 Tab., 26 Ref., 1 App.)

PY: 2002

<http://swuttc.tamu.edu/publications/technicalreports/compendiums/Compendium2002.pdf>

AB: Each year more than one million crashes occur at signalized intersections in the United States. Red light running was cited as the cause of 106,000 crashes, 89,000 injuries and about 1,036 deaths in the United States in the year 2000. In order to address the ever-growing problem of red light violators, some city governments and police departments have turned to automated enforcement. Traditional traffic enforcement requires a police officer to see the violation and then pursue the perpetrator in order to issue a violation. Not only is this costly in terms of deployment, but it is also hazardous for the police officer and the surrounding motorists as the officer may have to speed and run lights in order to catch the violator. The use of automated enforcement technology is a possible solution to the issue of safety and deployment costs. In countries such as the Netherlands and Australia, automated enforcement has decreased the number of red light violators by 35 to 60% and reduced right-angle crashes by 32%. Similar decreases in violations have also been observed in the United States. In New York City, NY, Howard County, MD, and San Francisco, CA the number of violations decreased 20%, 23%, and 40%, respectively. The major issue is whether or not the decrease of red light violators correlates to the reduction in crashes at intersections. From the literature review it can be inferred that red light cameras have an impact on reducing the amount of crashes and injuries at intersections. An e-mail survey was completed to evaluate the criteria utilized for the installation of red light cameras at intersections. Draft guidelines were developed from these criteria and were reviewed by a review committee. Upon the recommendations of the committee the final guidelines were produced. The final guidelines are as follows: (1) Accident history; (2) Red light citation history; (3) Approaching speeds; (4) Traffic and pedestrian volumes; (5) Intersection degree of saturation; and (6) Perceived benefit to cost. Based on these guidelines and the implementation guidelines from previous research, it is the goal that these guidelines be utilized to aid communities in developing countermeasures for red light running and identifying proper locations for the installation of red light cameras should all other countermeasures fail to curtail the red light violations.

19

TI: ***Feasibility of Real-Time Remote Speed Enforcement for Work Zones.***

AU: Fontaine, MD; Schrock, SD; Ullman, G

SO: Transportation Research Record. 2002. (1818) pp25-31 (1 Phot., 1 Fig., 3 Tab., 13 Ref.)

PY: 2002

<http://trb.metapress.com/content/510n0467743w118p/fulltext.pdf>

AB: Studies have shown that a large percentage of vehicles involved in work zone crashes are traveling at excessive speeds. Although traditional speed enforcement has been shown to reduce speeds through the work area, enforcement under these conditions can be dangerous to both the motoring public and enforcement officers. The work zone layout often limits the locations at which an officer can set up to enforce the speed limit and the locations at which violators can be stopped. Automated speed enforcement technology could help eliminate the need to stop violators in a work zone, but it is not currently a popular concept in the United States because of concerns about motorist privacy. Researchers hypothesized that this technology could be useful for work zone enforcement if adapted to a more real-time operation. The initial testing of the concept of remote speed enforcement is summarized. An automated speed enforcement system (consisting of digital video and lidar technology) was meshed with a wireless communications system. The unit determined when vehicles exceeded a certain speed threshold. If a vehicle was detected as exceeding the threshold, a digital photograph was taken of the violator. This photograph was then transmitted to an observer stationed downstream of the site. The technical feasibility of the system was assessed through field tests. Focus groups of law enforcement personnel were used to determine potential acceptance of the system in the law enforcement community. Recommendations for future improvements and possible applications of the system are made.

20

TI: ***Changes of Speed and Safety by Automated Speed Enforcement Systems.***

AU: Kang-J-G

SO: IATSS Research. 2002. 26(2) pp38-44 (2 Fig., 4 Tab., Refs.)

PY: 2002

[\[Online version not available – contact the library to borrow a copy\]](#)

AB: Speeding is considered one of the leading public health issues in Korea, because it is considered a major factor in the country's high rate of traffic fatalities. At the same time, there is widespread tolerance of driving above the speed limit for the enjoyment of the sensation of traveling fast. Korean officials began to deploy automated speed enforcement equipment in April 1997 to see if it would reduce speeding and traffic deaths and injuries. It was a massive effort, with more than 1,000 units in place by 2002. That number is expected to roughly double by 2003 and, by 2005, to double again for a total of 5,000. The data suggest that they were effective in cutting speeding violations and cutting fatal accidents. The units operate with speed measurements, plate number identification, automatic printing of a photograph and entry of the violation data for comparison and retrieval from a national database. The hope was to influence drivers' behavior by creating the impression that it was harder to evade and was fairer. Law enforcement agencies also hoped to make ticket issuing more efficient and enforcement safer. While nearly all drivers admitted to speeding under light traffic, support for the program was high, and 72% reported driving more slowly even where cameras were not in place.

21

TI: ***Modernizing Traffic Law Enforcement Through Automation: U.S Lags Behind.***

SO: Status Report. 2002/05/04. 37(5) pp7

PY: 2002

[\[Online version not available – contact the library to borrow a copy\]](#)

AB: This special issue summarizes information from around the world about the use of red light cameras and photo radar to enforce traffic laws. A review of red-light camera studies conducted in Australia, Singapore and the United States (in Oxnard, California), found reductions in injury crashes attributed to the use of cameras ranged from 7 percent to 46 percent. Another study looked at the use of photo radar to reduce speeding in Washington, D.C., and found that the proportion of motorists going fast enough to get a ticket declined on seven neighborhood streets where automated enforcement was used to ticket speeders. In the D.C. program, the police department mounted speed cameras on five different unmarked police cars, making it possible for officers to move the cameras among 60 enforcement zones throughout the city. This issue also briefly describes recent court decisions regarding the legality of automated enforcement programs in San Diego, California, and Denver, Colorado.

22.

TI: ***Safety Evaluation of Red-Light Cameras—Executive Summary.***

AU: Federal Highway Administration, Turner Fairbank Hwy Res Center, 6300 Georgetown Pike, McLean, VA, 22101, USA

SO: 2005/04. pp8 (1 Photo. 4 Tab., 7 Ref.)

PY: 2005

<http://www.tfhrc.gov/safety/pubs/05048/05048.pdf>

AB: The fundamental objective of this research was to determine the effectiveness of red-light-camera (RLC) systems in reducing crashes. The study involved empirical Bayes before-after research using data from seven jurisdictions across the United States to estimate the crash and associated economic effects of RLC systems. The study included 132 treatment sites, and specially derived rear end and right-angle unit crash costs for various severity levels. Crash effects detected were consistent in direction with those found in many previous studies: decreased right-angle crashes and increased rear end ones. The economic analysis examined the extent to which the increase in rear end crashes negates the benefits for decreased right-angle crashes. There was indeed a modest aggregate crash cost benefit of RLC systems. A disaggregate analysis found that the greatest economic benefits are associated with the following factors: the highest total entering average annual daily traffic, the largest ratios of right-angle to rear end crashes, and the presence of protected left-turn phases. There were weak indications of a spillover effect that point to a need for a more definitive, perhaps prospective, study of this issue.

Government Funded Research, Conference Papers, and Other Technical References

A long term study of Red Light Cameras and Accidents.

AU: Andreassen, David. Research Report
ARR 261. Australian Road Research Board. February, 1995.
<http://www.thenewspaper.com/rlc/docs/95aussie.pdf>

•Contains statistical analysis of crash records for sample of intersections in Melbourne, Victoria, Australia. Found no significant decline in right-angle crashes at RLC sites, Questioned location of sites given low crash frequency.

A Quantifiable Measure of Effectiveness of Red Light Running Cameras at Treatment and Non-Treatment Sites.

AU: Butler, Pamela Crenshaw. Howard University Thesis.
Washington, DC: May, 2001.

[Online version not available – contact the library to borrow a copy]

Contains statistical analysis of right-angle crash experience at two Howard County intersections. Found that reductions in crashes at the intersections were not statistically significant at the 95% confidence level, though they were close. No significant differences between the changes at the RLC and non-RLC intersections in Howard County, nor between the non-RLC sites in Howard County and several control sites in Pennsylvania.

Red Light Violations and Crashes at Urban Intersections.

AU: Datta, Tapan K. et al.
Transportation Research Record 1734. pp. 52-58
<http://trb.metapress.com/content/2074747156784352/fulltext.pdf>

Discusses comparative study of intersections with and without all-red intervals, no Discussion of RLC impacts.

Can We Make Red Light Runners Stop? Red Light Photo Enforcement in San Francisco, California.

AU: Fleck, Jack L. and Bridget B. Smith
San Francisco Department of Parking and Traffic. Press Release. March 1999.
<<http://www.ci.sf.ca.us/dpt/press.htm>> (also published as TRB preprint (see ITE report...))
<http://safety.fhwa.dot.gov/intersections/docs/fleck.pdf>

SF reduction in violations during pilot program, probably original source for 42% figure.

Accidents at Signal Controlled Junctions in Glasgow

AU: Halcrow Fox
The Scottish Office, Central Research Unit. 1996.
Summary here: <http://www.scotland.gov.uk/cru/resfinds/df23-00.htm>

[Online version of full report not available – contact the library to borrow a copy]

Crash reductions at all signalized intersections in Glasgow considering 3-year period before and after automated enforcement. Report mentions other safety initiatives and intersection improvements underway which may have influenced citywide decline in crashes.

The Third Survey of Attitudes of the American People on Highway and Auto Safety.

AU: Harris, Louis.
Prepared for Advocates for Highway and Auto Safety. September 1999.
<http://www.saferoads.org/polls/harrispoll99.pdf>

Presents results of nationwide survey questioning 1,005 people over the age of 18. Included a question asking if respondents would favor a statewide law permitting cities in their area to develop red light camera programs.

Methodology for Evaluation the Applicability of the use of Automated Enforcement for Traffic Safety in Alabama

AU: Hill, Stephen, John McFadden, and Andrew Graettinger. TRB 2001, paper #01-0515.
[Online version not available – contact the library to borrow a copy]

Contains literature review including Howard County figures, also Charlotte data (from first-year report), though quotation (or data) is inaccurate (quotes 22 crash reduction figures for 20 RLC intersections)

Automated Enforcement in Transportation.

ITE Informational Report. December 1999.

[[Online version not available – contact the library to borrow a copy](#)]

Includes a table of violation reductions.

Determining Vehicle Signal Change and Clearance Intervals.

ITE Technical Council Task Force 4TF-1. August 1994.

[[Online version not available – contact the library to borrow a copy](#)]

Presents some of the various methods used to determine lengths of yellow change intervals and red clearance intervals.

Red Light Running Behaviour at Red Light Camera and Control Intersections

AU: Kent, S. et al. Monash University Accident Research Centre – Report #73.

<http://www.monash.edu.au/muarc/reports/muarc073.pdf>

Report found no statistically reliable differences in red-light encroachments between RLC and non-RLC sites at sample of intersections in Melbourne, also no reliable Difference in crashes at the two sets of sites.

Implication of Automated Enforcement of Red Light Running on Traffic Records and Law Enforcement. International Forum on Traffic Records and Highway Information Systems.

AU: McFadden, John, et al.

Undated

[[Online version not available – contact the library to borrow a copy](#)]

Cites violation results from other reports.

Improving Road Safety: Speed and Red Light Cameras,

The Road Trauma Trust Fund.

Office of the Auditor General, Western Australia. No. 1. May 1996.

http://www.audit.wa.gov.au/reports/report96_01.html

Discusses operation of speed camera, red light camera, and related Road Trauma Trust Fund programs in and around Perth, Western Australia. Provides statistics on Frequency of right-angle and rear-end crashes at enforced intersections and compares to frequency at all Perth intersections. No discussion of methodology for obtaining statistics.

Use of Automated Enforcement for Red Light Violations

AU: Passetti, K.

August 1997, CVEN- 677 Advanced Surface Transportation Systems,

Department of Civil Engineering, Texas A&M University, College Station, Texas.

<http://safety.fhwa.dot.gov/intersections/docs/passetti.pdf>

Violation reductions from U.S. sites, also findings of no change in violations with initiation of RLR through small programs in the Netherlands (3 sites) and Polk County, Florida (4 sites). 1988 Australian crash reduction findings.

Photo Enforcement of Traffic Laws.

NCHRP Synthesis 219. Transportation Research Board, National Research Council. Washington,

DC: National Academy Press, 1995.

[[Online version not available – contact the library to borrow a copy](#)]

Safety impacts chapter discusses safety impact of automated speed enforcement.

Literature review during this project found 11 speed camera programs worldwide and stated that these programs were more prevalent than red-light camera systems.

Automated Enforcement: What Works, What Doesn't

AU: Polk, Amy.

ITE Districts 1 & 7

Annual Conference. Niagara Falls, Ontario. 6-10 May 2000.

[[Online version not available – contact the library to borrow a copy](#)]

Conference presentation reviewing experience with automate enforcement programs.

Red Light Running from Virginia to the Nation

AU: Porter, Bryan E.

Old Dominion University, Department of Psychology. 49th Annual Meeting of the Southern District ITE Conference. Williamsburg, VA. April 23, 2001.

[[Online version not available – contact the library to borrow a copy](#)]

Discusses impact of education and traditional enforcement programs in Virginia (Small percentage changes in violations and crashes increase during program, decline after)

Is Photo Enforcement For You? A White Paper for Public Officials

Public Technology, Inc. Undated

[[Online version not available – contact the library to borrow a copy](#)]

Discusses the issues surrounding photo enforcement as a solution to red-light running and lists states that have red-light camera legislation.

Red Light Running in Iowa: The Scope, Impact, and Possible Implications.

Final Report. Iowa State University, Center for Transportation Research and Education.

December 2000.

<http://www.ctre.iastate.edu/reports/RLRfull.pdf>

Reviewed only table of contents, RLR violation and crash data are in body of report, appears the sections are literature reviews, rather than new data (see summary report).

Changes in Crash Risk Following Re-Timing of Traffic Signal Change Intervals

AU: Retting, Richard A., et al.

[[Online version not available – contact the library to borrow a copy](#)]

Retiming signals to comply with ITE recommended practice yields crash reductions greater than those in a control group.

Crash Reductions Associated with Red Light Camera Enforcement in Oxnard, California.

AU: Retting, Richard A. and Sergey Y. Kyrychenko.

Insurance Institute for Highway Safety Report. Arlington, VA: April 2001.

[[Online version not available – contact the library to borrow a copy](#)]

Statistical analysis of crash occurrences in four California cities. Oxnard, with RLC, and three others without RLC. Found significant reduction in right-angle and right angle injury crashes at all intersections in Oxnard, however, these statistics were not computed for other cities. Comparison of citywide crash occurrences found reduction in Oxnard, though the figures for two of the control cities also declined, with Santa Barbara having the largest reduction in crashes.

Evaluation of Red Light Camera Enforcement in Fairfax, Va., USA.

AU: Retting, Richard A., et al.

ITE Journal. August 1999. pp. 30-34

[[Online version not available – contact the library to borrow a copy](#)]

Violation reductions, public opinion survey. Comparison of violation rates per 10,000 vehicles at enforced sites and in non-enforced (control) sites both in Fairfax and adjacent counties.

Evaluation of red light camera enforcement in Oxnard, California

Accident Analysis and Prevention 31 (1999). pp. 169-174.

AU: Retting, Richard A., et al.

[Online version not available – contact the library to borrow a copy]

Violation reduction, public opinion surveys

Prevalence and characteristics of red light running crashes in the United States

AU: Retting, Richard A., et al.

Accident Analysis and Prevention 31 (1999). pp. 687-694.

[Online version not available – contact the library to borrow a copy]

Discusses demographic characteristics of red light runners

Red Light Cameras and the Perceived Risk of Being Ticketed

AU: Retting, Richard A., and Allan F. Williams.

Traffic Engineering and Control Journal from June 2000. TEC 2000.

Results of telephone surveys on acceptance and awareness of RLC

Red-Light Running and Sensible Countermeasures: Summary of Research Findings

AU: Retting, Richard A., et al.

Transportation Research Record 1640. Transportation Research Board. Washington, DC:

National Academy Press, 1998.

<http://trb.metapress.com/content/867t2g9714k27013/fulltext.pdf>

Literature review of other research, including violation and crash reduction citations, primarily IIHS work.

Reducing Red Light Running Crashes: A Research Perspective

AU: Retting, Richard A.

ITE Annual Meeting 2000. Nashville, TN. August 2000.

[Online version not available – contact the library to borrow a copy]

References other IIHS figures, Oxnard, opinion survey

A Review of the Road Safety Benefits of Red Light Cameras

AU: Rocchi, Sarah.

ITE International Conference. Kissimmee, Florida, 1999.

[Online version not available – contact the library to borrow a copy]

Tables of violation and collision impacts, varying quality of sources for these figures

Automated Enforcement of Red Light Running Technology and Programs: A Review

AU: Smith, David M. et al.

Transportation Research Record 1734. pp. 29-36

<http://trb.metapress.com/content/9707566920085k07/fulltext.pdf>

Presents same results data as "Synthesis and Evaluation..." FHWA report

Evaluation of the Red Light Camera Program and the Owner Onus Legislation.

AU: South, D., et al.

Road Traffic Authority (Victoria, Australia). Report SR/88/1. 1988

http://www.atsb.gov.au/publications/1988/pdf/Camera_Eval.pdf

A copy of this report was not obtained during this literature review. However, it is cited and discussed in numerous other references, most thoroughly in Andreassen, 1995.

Benefits from Camera Technology Outweigh Privacy Issues

AU: Stevens, Sean C.

Georgetown University School of Foreign Service. Program in Science, Technology, and International Affairs.

[Online version not available – contact the library to borrow a copy]

Not a scientific paper, more of a discussion of the issues (written in first person)

Synthesis and Evaluation of Red Light Running Automated Enforcement Programs in the United States.

FHWA Report [FHWA-IF-00-004]. September 1999.

<http://safety.fhwa.dot.gov/intersections/docs/rlrfinal.pdf>

Violation reductions from NYC, San Francisco, Polk County, Howard County, reference to crash reduction in Polk County, though authors stress need for additional data

Overview of Automated Enforcement in Transportation

AU: Turner, Shawn, and Amy Polk.

Prepared for publication in ITE Journal. June 1998.

<http://safety.fhwa.dot.gov/intersections/docs/turner.pdf>

Primarily summarizes implementation efforts and technologies

Running the Red and Evaluation of Strathclyde Police's Red Light Camera Initiative

AU: Winn, Ray.

The Scottish Office, Central Research Unit. 1995.

[Online version not available – contact the library to borrow a copy]

Violation rates and collision reductions at enforced intersections in Glasgow.

Violation rates (infringements/infringement opportunities) from observer records, collision reductions from query of crash records for intersections with primary causation being “red light running.

Using Focus Groups to Investigate Issues of Red Light Running

AU: Wissinger, Leanne M. et al.

Transportation Research Record 1734. pp.38-45. Washington, DC: 2000

<http://trb.metapress.com/content/hj50423kh7242q07/fulltext.pdf>

Literature review of customer opinion surveys, presents results of focus group efforts

Candid Camera

Local Reports

Anderson, Lon. “AAA World. November/December. pg. 7

[Online version not available – contact the library to borrow a copy]

Discusses AAA position on red light cameras, cites Fairfax, VA violation reduction and Howard County, MD injury crash reduction.

Applications Increase for Automated Traffic Violation Enforcement

The UrbanTransportation Monitor.

December 22, 2000. pg.1+

[Online version not available – contact the library to borrow a copy]

Describes several ongoing automated enforcement efforts in U.S. Results of public opinion survey in Scottsdale, Arizona.

Safety – Stop Red Light Running Red Light Camera Effectiveness

FHWA website, undated.

<http://safety.fhwa.dot.gov/fourthlevel/srlr/effect.htm>

Crash reduction and violation trends from U.S. and abroad. Few references given.

Photo Red Light Enforcement Program

City of Fairfax, Virginia.

[Online version not available – contact the library to borrow a copy]

Gives decline in violations per hour at the 8 monitored intersections. Also cites IIHS study of 44% decline.

SafeLight Charlotte: First-Year Report

Undated.

[Online version not available – contact the library to borrow a copy]

Violation trends (fluctuations during first year due to increase in number of enforced intersections and improvements in performance of equipment). Crash reductions cited overall and for select intersections. No description of data collection methodology.

SafeLight Charlotte: Annual Report: August 1999 – July 2000

[Online version not available – contact the library to borrow a copy]

These reports discuss crashes at enforced intersections before and after program began. However, reporting is incomplete and varies between this annual report and the previous first-year report, making it difficult to draw conclusions from the data presented.

Safelight Wilmington: First Year in Review

Brochure, City of Wilmington, NC. 2001

[Online version not available – contact the library to borrow a copy]

Collision data 1 yr before and after enforcement began at 10 intersections. Spoke with Jim Flechtner, City of Wilmington: crash figures were from reviewed police reports for all 10 enforced intersections.

Cost Bibliography: Government Funded Research, Conference Papers, and Other Technical References

FHWA. Safety – Stop Red Light Running Cameras Implementation Issues

FHWA website, undated.

http://safety.fhwa.dot.gov/intersections/rlrcam_implement.htm

Review of Automated Enforcement Programs in the Washington, D.C. Area

AU: Polk, Amy.

ITE International Conference. Kissimmee, Florida, 1999.

[Online version not available – contact the library to borrow a copy]

Features in periodicals:

WorkZone Speed Enforcement in Illinois

Slideshow by Priscilla Tobias, State Safety Engineer

Illinois Dept of Transportation (IDOT), 2005

A slide presentation on Workzone Speed Enforcement in Illinois

<http://www.modot.org/tsc/documents/WorkZone.pdf>

Key Points of Illinois DOT Program:

- Work Zone Fines Apply
- Workers Present
- No Restriction on Time of Day
- Work Zone Must be Signed
- Picture of Driver & License Plate
- Time, Date, & Location
- Violation Tied to Driver
- Notice Sent Certified Mail in 6 Business Days
- Trooper NOT Required
- Public Awareness Campaign

IDOT, Tollway and State Police Warn Drivers to Prepare for Highway Construction Season

PRESS RELEASE, IDOT, March 30, 2005

IDOT, Tollway and State Police Warn Drivers to Prepare for Highway Construction Season New tools this year include increased fines, loss of license and photo enforcement

CHICAGO—The Illinois Department of Transportation (IDOT) joined with the State Police and Illinois Tollway to remind motorists construction season is about to kick in to gear and warn that tough new laws are on the books that target drivers who flout work zone speed limits and endanger the lives of construction workers and other drivers.

“Next week is Work Zone Safety Week and the traditional beginning to highway construction season. We want to send a message to motorists now to slow down in work zones,” IDOT Secretary Timothy W. Martin said. “If you are caught speeding in a work zone, at minimum you will be looking at a fine of \$375, at worst, you can kill yourself, a loved one or a worker.”

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Matt Vanover 217/836.2267(IDOT)

Lincoln Hampton 312/446.1676 (ISP)

<http://www.dot.state.il.us/press/r033005.html>

1. ***Feeling camera shy; While Nassau seeks state OK for red-light cameras debate over their use continues***, Newsday (New York), May 21, 2007 Monday, NASSAU AND SUFFOLK EDITION, NEWS; Pg. A06, 1252 words, BY JOIE TYRRELL AND SID CASSESE. joie.tyrrell.newsday.com; sid.cassese@newsday.com

2. ***House OKs bill on red-light camera use; Houston, other Texas cities have two years to prove devices aid safety or remove them***, The Houston Chronicle, May 16, 2007 Wednesday, 3 STAR EDITION, B; Pg. 4, 478 words, KRISTEN MACK, STAFF, AUSTIN

3. ***More red-light cameras***, Chicago Tribune, May 12, 2007 Saturday, RedEye Edition, Pg. 5, 59 words, RedEye

4. ***Red-light cameras in works***, Fort Worth Star-Telegram (Texas), May 12, 2007 Saturday, B; Pg. 1, 130 words, SALLY CLAUNCH, Star-Telegram staff writer

5. ***Green light for cameras***; Nassau legislators OK seeking red-light cameras to nab traffic violators after plan meets AAA concerns, Newsday (New York), May 10, 2007 Thursday, NASSAU AND SUFFOLK EDITION, NEWS; Pg. A36, 357 words, BY SID CASSESE AND CELESTE HARDICK. sid.cassese@newsday.com; celeste.hardick@newsday.com

6. ***More brakes applied to red-light-camera idea***, Orlando Sentinel (Florida), May 10, 2007 Thursday, FINAL, LOCAL & STATE; FLORIDA; Pg. B3, 253 words, Jay Hamburg, Sentinel Staff Writer

7. ***Think again Our position: An embarrassing vote on red-light cameras ignores threat to public safety.***, Orlando Sentinel (Florida), May 10, 2007 Thursday, FINAL, EDITORIAL; FLORIDA; OPINION; Pg. A14, 469 words, Sable

8. ***Keeping focus on red-light camera debate***, Newsday (New York), May 9, 2007 Wednesday, NASSAU AND SUFFOLK EDITION, NEWS; Pg. A07, 563 words, BY SID CASSESE. sid.cassese@newsday.com

9. ***Suozi to lobby for cigarette tax, red-light cameras***, Newsday (New York), May 8, 2007 Tuesday, NASSAU AND SUFFOLK EDITION, NEWS; Pg. A17, 241 words, BY REID J. EPSTEIN. reid.epstein@newsday.com

10. **City to add 6 more red light cameras**, Chicago Tribune, May 7, 2007 Monday, RedEye Edition, Pg. 8, 247 words, Chicago Tribune
11. **City adds 6 red-light cameras**, Chicago Sun Times, May 5, 2007 Saturday, Final Edition, NEWS; Pg. 8, 290 words, Fran Spielman, The Chicago Sun-Times
12. **Red-light cameras at work**, Fort Worth Star-Telegram (Texas), May 3, 2007 Thursday, B; Pg. 1, 108 words, John Kirsch, Star-Telegram Staff Writer
13. **Oak Ridge North considers red-light camera for intersection; City sets survey before finalizing plans; Woodlands also adds devices**, The Houston Chronicle, May 3, 2007 Thursday, 2 STAR EDITION, THISWEEK; Pg. 12, 1063 words, BOB HOWIE, Houston Chronicle Correspondent, LAURA ISENSEE, Staff
14. **MetroPlan wants red-light cameras**, Orlando Sentinel (Florida), May 3, 2007 Thursday, FINAL, ORANGE; EAST; GOVERNMENT WATCH; Pg. H1, 94 words
15. **Progress on red-light cameras comes to halt; An e-mail from a former KC traffic engineer raises ethical questions and leads to a review.**, The Kansas City Star, May 2, 2007 Wednesday, B; Pg. 5, 813 words, LYNN HORSLEY, The Kansas City Star
16. **Brakes applied to red-light camera bill**, Orlando Sentinel (Florida), April 21, 2007 Saturday, FINAL, A SECTION; FINAL; Pg. A1, 653 words, John Kennedy, Tallahassee Bureau Chief
17. **Will state greenlight red-light cameras?**, Orlando Sentinel (Florida), April 20, 2007 Friday, FINAL, LOCAL & STATE; FLORIDA; Pg. B2, 497 words, Jay Hamburg, Sentinel Staff Writer
18. **Green light for red light camera upgrades; Divided council approves plan to upgrade technology at existing locations, and considers adding cameras at two more intersections.**, The Orange County Register (California), April 19, 2007 Thursday, 1 Edition, CAPOVALLEY; Pg. NewsC, 497 words, BY SEAN EMERY; STAFF WRITER
19. **City approves red light camera upgrades; San Juan Capistrano will also study adding the devices at two intersections.** The Orange County Register (California), April 19, 2007 Thursday, 1 Edition, LOCAL; Pg. County_B, 324 words, By SEAN EMERY; The Orange County Register, SAN JUAN CAPISTRANO
20. **Lifesavers, not moneymakers Assurances for skeptics of red-light cameras**, Orlando Sentinel (Florida), April 19, 2007 Thursday, FINAL, EDITORIAL; FLORIDA; OTHER VIEWS, My WORD; Pg. A13, 399 words, Linda Stewart
21. **Red alert Our position: If Baker won't yield on red-light cameras, Webster can clear the way.**, Orlando Sentinel (Florida), April 19, 2007 Thursday, FINAL, EDITORIAL; FLORIDA; OPINION; Pg. A12, 380 words, Sable
22. **Red light cameras debated; Capistrano considers two new devices for streets.**, The Orange County Register (California), April 18, 2007 Wednesday Correction Appended, 1 Edition, LOCAL; Pg. South, 330 words, BY SEAN EMERY; The Orange County Register, SAN JUAN CAPISTRANO
23. **Focus is on red-light cameras, Orlando** Sentinel (Florida), April 18, 2007 Wednesday, FINAL, LOCAL & STATE; FLORIDA; CENTRAL FLORIDA, The Area, In Brief; Pg. B3, 151 words
24. **Problems with red-light cameras**, Fort Worth Star-Telegram (Texas), April 13, 2007 Friday, B; Pg. 10, 204 words, Star-Telegram
25. **Catch LI scofflaws; Albany should OK red-light cameras**, Newsday (New York), April 12, 2007 Thursday, ALL EDITIONS, OPINION; Pg. A40, 263 words
26. **Schertz to install red-light cameras**, San Antonio Express-News, April 11, 2007 Wednesday, STATE&METRO Edition, NEIGHBORS - NORTHEAST; Pg. 1NE, 679 words, Chuck McCollough, EXPRESS-NEWS STAFF WRITER

27. **Red-light cameras illegal, state's high court rules; Supreme Court rejected Minneapolis' camera system for ticketing red-light runners, but state still could bring back PhotoCop program.**, Star Tribune (Minneapolis, MN), April 6, 2007 Friday, Metro Edition, NEWS; Pg. 1A, 650 words, Rochelle Olson, Staff Writer
28. **Senate approves red-light cameras Legislature: Bills cap fines, require cities to split revenue with state**, THE DALLAS MORNING NEWS, April 4, 2007 Wednesday, FIRST EDITION, METRO; Pg. 1B, 761 words, TERRENCE STUTZ, Austin Bureau tstutz@dallasnews.com
29. **honk; Beware of red-light cameras**, The Orange County Register (California), April 2, 2007 Monday, 1 Edition, LOCAL; Pg. County_B, 476 words, JIM RADCLIFFE
30. **Blog; Political Insider; Lobbyist alert: Cagle on budget, red-light cameras, and the gun-in-parking lots bill**, The Atlanta Journal-Constitution, March 23, 2007 Friday, Online Edition, METRO NEWS; Pg. 0, 337 words, TOM BAXTER, JIM GALLOWAY; Staff
31. **Legislature 2007: House spares red-light cameras**, The Atlanta Journal-Constitution, March 21, 2007 Wednesday, Main Edition, METRO NEWS; Pg. 5D, 621 words, JEREMY REDMON; Staff
32. **OUR OPINIONS: Safety from red-light cameras vital**, The Atlanta Journal-Constitution, March 20, 2007 Tuesday, Main Edition, EDITORIAL; Pg. 12A, 400 words, MAUREEN DOWNEY; Staff
33. **Picture this - Our position: Legislators should build on momentum for red-light cameras**, Orlando Sentinel (Florida), March 18, 2007 Sunday, FINAL, EDITORIAL; FLORIDA; OPINION; Pg. A20, 418 words, Sable
34. **Red-light cameras give ride program a 'go'**, St. Louis Post-Dispatch (Missouri), March 18, 2007 Sunday, THIRD EDITION, METRO; Pg. C1, 950 words, By Tim Bryant ST. LOUIS POST-DISPATCH, ST. PETERS
35. **Don't Give the Green Light to Intrusive Red-Light Cameras**, The Washington Post, March 18, 2007 Sunday, Regional Edition, EDITORIAL COPY; Pg. B08, 569 words
36. **Blog; Political Insider; Red-light camera bill gets the green light, and so does a Feb. 5 presidential primary**, The Atlanta Journal-Constitution, March 16, 2007 Friday, Online Edition, METRO NEWS; Pg. 0, 152 words, TOM BAXTER, JIM GALLOWAY; Staff
37. **Many D.C. Red-Light Cameras Broken; City May Have Lost Millions in Fines**, The Washington Post, March 13, 2007 Tuesday, Final Edition, A Section; A01, 791 words, Nikita Stewart and Yolanda Woodlee, Washington Post Staff Writers
38. **Committee signals 'go' on red-light cameras; 'Photo cop' still facing court challenge**, Saint Paul Pioneer Press (Minnesota), March 10, 2007 Saturday, LOCAL; Pg. 8B, 402 words, DENNIS LIEN, Pioneer Press
39. **SENSIBLE RED-LIGHT CAMERAS AREN'T BIG BROTHER**, The Arizona Republic (Phoenix), March 9, 2007 Friday, Final Chaser Edition, SURPRISE REPUBLIC; EDITORIAL COLUMNIST; Pg. 38, 286 words, JEREMY DOWELL, The Arizona Republic
40. **Don't Slam on the Brakes Stop efforts forcing cities to share red-light camera revenues with Austin**, THE DALLAS MORNING NEWS, March 9, 2007 Friday, NORTH EDITION, EDITORIALS; Pg. 12B, 414 words
41. **Plan shares red-light camera fines Legislature: Senate bill would give part of payments to state**, THE DALLAS MORNING NEWS, March 8, 2007 Thursday, FIRST EDITION, NEWS; Pg. 3A, 553 words, TERRENCE STUTZ, Austin Bureau tstutz@dallasnews.com
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43. **Red-light cameras favored**, Orlando Sentinel (Florida), March 7, 2007 Wednesday, FINAL, LOCAL & STATE; FINAL; CENTRAL FLORIDA, The Area, In Brief; Pg. B3, 105 words
44. **Proposal would allow red-light cameras in N.J.**, The Philadelphia Inquirer, March 7, 2007 Wednesday, SOUTH JERSEY; Pg. B05, 185 words
45. **Council rejects red light cameras**, St. Louis Post-Dispatch (Missouri), March 7, 2007 Wednesday, SECOND EDITION, METRO; Pg. B1, 243 words, By Mark Schlinkmann ST. LOUIS POST-DISPATCH, ST. CHARLES
46. **COUNCIL MAY ADD RED-LIGHT CAMERAS**, The Arizona Republic (Phoenix), March 5, 2007 Monday, Final Chaser Edition, VALLEY & STATE; Pg. 2, 369 words, Edythe Jensen, The Arizona Republic; Reporter Doug Carroll contributed to this article.
47. **Red-light cameras: A benefit or not?** The Atlanta Journal-Constitution, March 2, 2007 Friday, Main Edition, GWINNETT NEWS; Pg. 4J, 361 words, BILL ALLEN; For the Journal-Constitution
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49. **Red-light cameras a win-win for all**, The Columbus Dispatch (Ohio), March 2, 2007 Friday, Home Final Edition, NEWS; Pg. 01D, 522 words, Ann Fisher, The Columbus Dispatch
50. **Blog; Political Insider; The new red-light camera bill: What happens when matter and anti-matter collide**, The Atlanta Journal-Constitution, March 1, 2007 Thursday, Online Edition, METRO NEWS; Pg. 0, 332 words, TOM BAXTER, JIM GALLOWAY; Staff
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52. **PEORIA CONSIDERS INSTALLING RED-LIGHT CAMERAS**, The Arizona Republic (Phoenix), February 28, 2007 Wednesday, Final Chaser Edition, NORTHWEST VALLEY REPUBLIC; Pg. 27, 600 words, Cecilia Chan, The Arizona Republic
53. **Red-light cameras hard to beat, records show**, The Columbus Dispatch (Ohio), February 28, 2007 Wednesday Correction Appended, Home Final Edition, NEWS; Pg. 03E, 607 words, Mark Ferencik, THE COLUMBUS DISPATCH
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55. **THE NATION; Red-light cameras nab police in D.C.; Officers heading to emergencies get caught in red tape, union says.**, Los Angeles Times, February 25, 2007 Sunday, Home Edition, MAIN NEWS; National Desk; Part A; Pg. 18, 252 words, From the Associated Press, WASHINGTON
56. **Lost Priority Our Position: It's shameful that no legislator sees the importance of red-light cameras**. Orlando Sentinel (Florida), February 25, 2007 Sunday, FINAL, EDITORIAL; FLORIDA; OPINION; Pg. A20, 519 words, Sable
57. **Officers issue tickets that result from red-light cameras**. The Columbus Dispatch (Ohio), February 24, 2007 Saturday, Home Final Edition, EDITORIAL & COMMENT; LETTERS TO THE EDITOR; Pg. 13A, 594 words
58. **Irving hires firm to operate 4 red-light cameras Devices expected to be in place by June, but sites not announced**, THE DALLAS MORNING NEWS, February 23, 2007 Friday,

WEST EDITION, METRO; Pg. 11B, 229 words, ERIC AASEN, Staff Writer
eaasen@dallasnews.com

59. **Red-light cameras can save lives**, USA TODAY, February 23, 2007 Friday, FINAL EDITION, NEWS; Pg. 10A, 502 words

60. **Devices also snap up lots of money**, The Atlanta Journal-Constitution, February 22, 2007 Thursday, Main Edition, METRO NEWS; Pg. 1B, 900 words, PAUL KAPLAN, JEREMY REDMON; Staff

61. **Bill may resolve dispute over red-light cameras Legislature: Compromise could let cities, state share money from fines**, THE DALLAS MORNING NEWS, February 22, 2007 Thursday, FIRST EDITION, NEWS; Pg. 3A, 504 words, TERRENCE STUTZ, Austin Bureau

62. **RED-LIGHT CAMERAS COULD RAKE IN CASH**. Orlando Sentinel (Florida), February 21, 2007 Wednesday, FINAL, A SECTION; FINAL; SENTINEL SPECIAL REPORT; Pg. A1, 910 words, Jay Hamburg, Sentinel Staff Writer

63. **Va. Senate Approves Red-Light Cameras**, The Washington Post, February 21, 2007 Wednesday, Final Edition, Metro; B01, 896 words, Amy Gardner and Tim Craig, Washington Post Staff Writers, RICHMOND Feb. 20

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Published reports:

Automated Speed Enforcement

Record Type: Research in Progress (RiP), 2006
Sponsor Organization: South Dakota Department of Transportation
<http://www.state.sd.us/dot/>
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http://www.state.sd.us/Applications/HR19ResearchProjects/oneproject_search.asp?projectnbr=SD1997-12

Traffic accidents in construction work zones are a nationally significant problem. In urban areas, heavy traffic volumes and high speeds make construction work extremely hazardous. In rural areas, traffic volumes may be lower, but the problem of high speeds can be even more severe. Unfortunately, these results are not atypical. High vehicle speeds have contributed to accidents and fatalities. One South Dakota study has shown that the presence of the highway patrol can reduce traffic speeds in work zones, but unless officers actually issue citations, the effect of presence alone is temporary. Sufficient numbers of officers are not available for continuous enforcement. Furthermore, intensive enforcement activities within the work zone could aggravate congestion and traffic conflicts within the work zone. Other jurisdictions have found that the use of automated speed enforcement devices can provide similar speed reductions and substantially raise drivers' awareness of speed limits.

Automated speed enforcement systems consist of a narrow-beam radar speed detection unit and one or more flash cameras that photograph vehicles exceeding a specified speed threshold. After violations are detected, the film is processed to reveal speeding vehicles' license numbers and their recorded speeds. The owner of the vehicle is mailed a citation and assessed a civil penalty, in much the same manner as a parking violation might be handled. Because the vehicle owner, not necessarily the driver, is cited, the violation is not a normal speeding violation, and the owner

is not assessed points against his driving record. Similar systems have also been used to reduce red light violations. The speed enforcement system to be evaluated in this study differs from photo radar systems in both the camera and the speed detection method used. Rather than using a still camera together with a traditional radar gun, the LaVideo system uses a video camera with a Lidar unit - a very narrow beam laser unit that is capable of detecting a small target speeding within a group of larger vehicles. The LaVideo system also differs from photo radar units in that it must be manned to keep the camera and Lidar trained on the vehicle.

Initial work was done during the summer of 1997 to evaluate two of the laser video units. These units were operated by a South Dakota Department of Transportation (SDDOT) employee along with a Highway Patrol officer. Violators videotaped while speeding through work zones received warning letters, not citations. Only five warnings were issued. Although automated speed enforcement systems have been well demonstrated in fixed speed zones, they have not been widely used in work zones. Demonstrating their ability to reduce vehicle speeds in work zones will be a worthwhile endeavor, not only for South Dakota, but also for the rest of the nation. The objectives of this research project will be to: (1) evaluate the effectiveness of Video/Lidar system in work zones; (2) evaluate the functional capabilities and limitations of the video/lidar system in work zones; (3) evaluate the cost effectiveness of the Video/lidar system in work zones; and (4) develop recommendations for other applications of the video/lidar system.

Automated Enforcement for Speeding and Red Light Running

NCHRP 03-93 [Anticipated]

Project Data

Source: AASHTO Standing Committee on Highway Traffic Safety

Comments: In development

Fiscal Year: 2008

This project has been tentatively selected and a project statement (request for proposals) is expected in August 2007. The project statement will be available on this world-wide-web site. The problem statement below will be the starting point for a panel of experts to develop the project statement.

There is a major national emphasis on highway safety and the attainment of aggressive reductions in traffic fatalities. Among other issues, speeding is a major contributor to the safety problem in the United States and requires specific attention, being a contributing factor in around 30% of all fatalities. Speed is a common factor in fatal motorcycle crashes, which have been increasing at an alarming rate in recent years. There is a growing consensus that we are not making the desired progress in safety, in part, because increases in speed are counteracting the benefits of many of the safety treatments we are implementing.

INF12 Improve Efficiency of Extra Enforcement Program in Highway Work Zones with Fewer Resources

California Performance Review, 2006

<http://cpr.ca.gov/report/cprprt/issrec/inf/inf12.htm>

The California Department of Transportation (Caltrans) uses the California Highway Patrol to provide extra enforcement services in highway construction and maintenance work zones, primarily for speed enforcement. There may be a more efficient or cost-effective way to perform this function, whether it is conducted by patrol units or through automated enforcement.

Caltrans maintains an extra enforcement program to improve the safety of motorists and workers in state highway construction and maintenance work zones. Caltrans and CHP jointly operate this program, comprised of two parts, the Construction Zone Enforcement Enhancement Program (COZEEP) and the Maintenance Zone Enforcement Enhancement Program (MAZEEP). CHP uses circulating and stationary patrol vehicles to monitor speeds and issue citations, to apply traffic control measures, and to enforce truck inspection. [1] Extra enforcement is considered

beneficial when traffic congestion is expected or when unique conditions, such as visibility problems, full freeway closures, and high accident locations, warrant additional public motorist or worker protection.

This program was originally established as a security measure for workers in construction zones in Southern California during night-time operations. As that need diminished, functions were later expanded to include traffic control and speed surveillance and reduction.

Periodicals:

Articles from the Chicago Tribune about IDOT using speed cameras in work zones.

<http://dot.state.il.us/workzone/Q&AsPhotoEnforce.pdf>

<http://www.dot.state.il.us/press/r040406.html>

WorkZone Speed Enforcement in Illinois-Slideshow

Illinois Dept of Transportation

By Priscilla Tobias

State Safety Engineer

A slide presentation on Workzone Speed Enforcement in Illinois.

<http://www.modot.org/tsc/documents/WorkZone.pdf>

Automated Traffic Enforcement in the United States

Presentation by Dr. Anthony Kane (AKane@ashto.org)

Director of Engineering and Technical Services

American Association of State Highway and Transportation Officials (AASHTO)

Slide Presentation at IBEC, ITS World Congress, London, England, October 8, 2006

<http://www.ibec->

[its.org/Presentations/Sunday%20Sessions/Automated%20Enforcement/Automated%20Traffic%20Enforcement%20in%20the%20US%203.pdf](http://www.ibec-its.org/Presentations/Sunday%20Sessions/Automated%20Enforcement/Automated%20Traffic%20Enforcement%20in%20the%20US%203.pdf)

Creating Enforcement-Friendly Work Zones

Practitioner Tools Workshops ITS and Mitigation

By Gerald L. Ullman, PhD, PE, Program Manager, Texas Transportation Institute

Michael D. Fontaine, Research Scientist, Virginia Transportation Research Council

Steven D. Schrock, Graduate Assistant Researcher, Texas Transportation Institute

<http://ops.fhwa.dot.gov/wz/workshops/accessible/Ullman.htm>

Law enforcement presence in work zones has long been recognized as one of the most effective speed reduction methods available to transportation officials. High labor costs, manpower shortages, and the many other demands placed on law enforcement makes universal enforcement presence at all work zones impossible. Most states have enacted higher fines for violations in work zones. While designed to improve motorist compliance, some of these higher fine structures include certain stipulations that create unintended difficulties for enforcement personnel. Further complicating the problem is the fact that the actual design of, and activities within, many work zones makes effective enforcement extremely difficult. Long work zones that have no emergency shoulders on either side of the roadway offer no place for enforcement personnel to position their vehicles to monitor traffic or to pull over violators to issue a citation. Consequently, officers attempting to stop a violator are forced to either follow the violator completely through the work zone before activating their emergency lights and pulling the violator

over, or activating their lights within the work zone and risk the chance that the motorist will then stop in the moving lane of traffic.

Recently, the Texas Department of Transportation (TxDOT) has funded research to identify and evaluate ways that work zones could be made more "enforcement friendly." This paper summarizes some of the key findings from that research. Three categories of possible improvements to the enforceability of work zones have been identified:

Effectiveness of Extra Enforcement in Construction and Maintenance Work Zones

Center for Transportation Research and Education, Iowa State University, May 2003

Author(s) Ali Kamyab, Tom McDonald, Brandon Storm, and Mark Anderson-Wilk

Center for Transportation Research and Education, Iowa State University

Midwest States Smart Work Zone Deployment Initiative

Mid-America Transportation Center, University of Nebraska-Lincoln

<http://www.ctre.iastate.edu/reports/WZ4E.pdf>

Abstract: As traffic-related work zone crashes continue to increase across the nation, safety of road users and workers has become a top priority for transportation agencies. Since inattention and irresponsible behavior by drivers are surmised to contribute to the frequency of work zone crashes, a program featuring extraordinary presence of and enforcement by law officers has been implemented in many states to address this concern. A literature search of such programs and related research was conducted. While the overall benefits of these activities have been found positive, much of the evidence has been anecdotal. To assess the scope of extra work zone enforcement programs, a survey was developed and distributed to state departments of transportation across the nation. This survey sought information regarding these efforts such as criteria for selection of target work zones, methods of enforcement operations, and beneficial results. A special survey was also designed and distributed to enforcement agencies in Iowa and other selected states. In addition to the surveys, personal contacts and office visits were conducted by the research team staff.

The study found that use of extra enforcement in work zones is a common practice in many states and these activities appear to be increasing. Current literature, survey responses, and interviews have all indicated a prevalent opinion for the benefits of increased law enforcement presence and activity in work zones. Very few comments offered conclusions of negative impacts, such as additional congestion, from these efforts. However, the beneficial effects of focused enforcement have not been intensively quantified. In addition, procedures for the use of law officers in work zones are quite inconsistent across the nation, as is the general implementation of specific legislation addressing work zone traffic violations. Similar variation can be found in funding levels and sources for enforcement activities in work zones among the states. Training of law officers prior to work zone duty does not appear to be commonly required, though the value of focused training is being recognized in some states.

As crashes and deaths continue to rise annually in our nation's work zones, it is imperative that demonstrated beneficial programs such as the expanded use of law officers in these locations be continued, refined, and expanded. Future study is needed to supplement the knowledge base and provide guidance to agencies when considering the use of law enforcement to calm traffic, ensure compliance with traffic laws, and thus provide for safer work zones.

Applications of Automated Speed Enforcement Equipment

Project Researcher(s): Jon Becker, Project Researcher

South Dakota Department of Transportation

Research Period: 4/1/2002 - 2/28/2003

http://www.state.sd.us/Applications/HR19ResearchProjects/oneproject_search.asp?projectnbr=S D2001-06

Traffic accidents in construction work zones are a nationally significant problem. In urban areas, heavy traffic volumes and high speeds make construction work extremely hazardous. In rural areas, traffic volumes may be lower, but the problem of high speeds can be even more severe.

One South Dakota study has shown that the presence of the highway patrol can reduce traffic speeds in work zones, but unless officers actually issue citations, the effect of presence alone is temporary. Sufficient numbers of officers are not available for continuous enforcement.

Research project SD97-12 evaluated a manned video/Lidar system to detect speeders with the intention of issuing citations through the mail. The SDDOT attempted to pass legislation allowing the issuance of speeding citations through the mail. However, it did not pass, and the use of video/lidar systems was not allowed in the enforcement of regulatory speed limits in work zones. Legislators were unwilling to support issuing citations based on video or photos taken of a speeding vehicle.

Traditional speed control methods without consequences offer short-term effects, and speeds gradually increase as motorists become accustomed to the devices. The panel feels that by demonstrating that speeding problems exist in certain school zones, and that speed reduction methods such as speed monitoring displays and decoy cars are only temporary solutions, legislators will be more willing to allow the use of automated enforcement technologies.

This research would collect data to determine whether speeding problems exist in school zones, and whether automated speed enforcement devices are capable of deterring speeders in school zones. Automated equipment installed in school zones would collect information about motorists speeding through school zones, giving researchers an idea of how many citations would have been issued if legislation allowed it.

Gov. Blagojevich announces plan to better protect drivers and workers in highway work zones

Illinois Government News Network

March 30, 2004,

<http://www.illinois.gov/PRessReleases/PressReleasesListShow.cfm?RecNum=2881> (last visited June 18, 2004).

New York Department of Transportation, "Operation Hard Hat,"

<http://www.dot.state.ny.us/traffic/ohh/index.html> (last visited June 18, 2004).

Photo Radar Demonstration Project Evaluation Executive Summary

Portland Police Bureau

<http://www.portlandonline.com/police/index.cfm?c=cjha&a=dcdij> (last visited June 18, 2004).

New Additions

Work Zone Traffic Management on Highways

AN: 01031351

Authors: Jacob, C; Hadayeghi, A; Abdulhai, B; Malone, B

Corp. Authors/Publisher: Transport Canada; Synectics Transportation Consultants Inc., Canada

Year: 2006

Document: <http://www.tc.gc.ca/tdc/publication/pdf/14500/14569e.pdf>;

<http://www.tc.gc.ca/tdc/publication/pdf/14500/14569e.pdf>

Database: TRIS Online

The focus of this study was on the development of functional and system requirements for an integrated, realtime temporary condition **Traffic Management System** for work zones on **Canadian** roadways (**TMS-Can**). TMS-Can uses a combination of electronic sensors, software, wireless and cable communications networks, and electronic signs and variable message signs to manipulate traffic flow. The travel information on traffic routing displayed by these variable message signs is

computed by a computer agent driven by Reinforcement Learning. Reinforcement Learning is an approach whereby the control agent directly learns to map sensed system states to optimal actions. A simple but powerful reinforcement learning method known as Q-learning is used. A micro simulation tool – Paramics – was utilized to train the agent in an offline mode within a simulation environment in order to make it ready for field implementation. The approach developed in this research was rigorously evaluated under simulated conditions. Results from the simulation are very encouraging and have demonstrated the effectiveness and superiority of the technique in reducing congestion in work zones. Deployment of the developed system at the field trial stage was not completed under this study.