M A S S

INTERCHANGE

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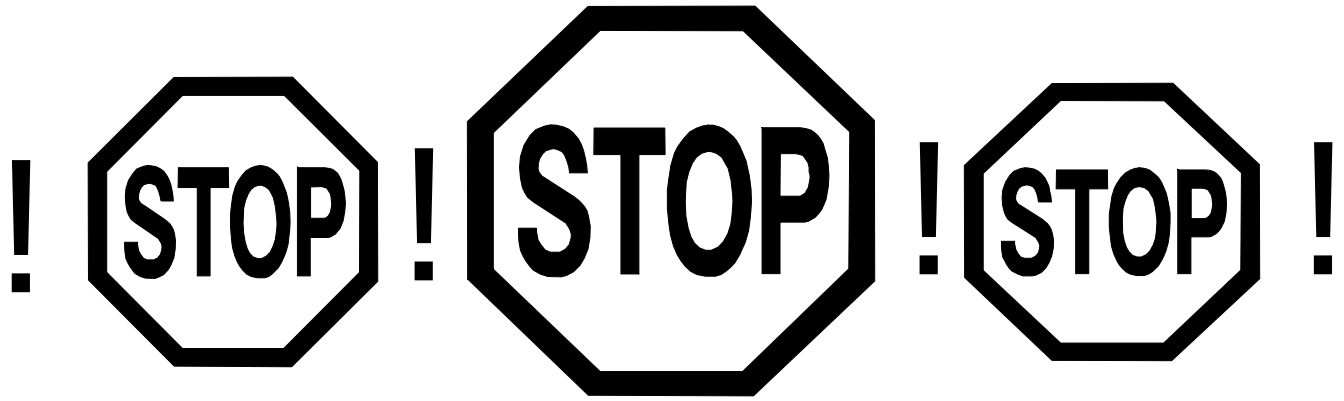
STOP SIGN EPIDEMIC



Many years ago the state public works department controlled the permitting of all traffic control signs and signals. This became a burdensome responsibility with continuous requests for signs and signals from local elected officials. In 1987 a law was passed that allowed cities and towns to authorize and install traffic control signs or signals as long as they "are in conformance with the department's current manual on uniform traffic control devices and the department's sample regulation for a standard municipal traffic code" (see Massachusetts General Laws, Chapter 689).

To install or change the timing on a traffic signal, cities or towns can hire their own engineer, and do so without state approval. This hasn't happened because they are expensive. Local officials still rely on the Massachusetts Highway Department to determine the location and timing of traffic signals, because the state funds the installation of signals that they agree are necessary. The cost of signalizing an intersection could easily top $200,000 for equipment and installation. If MassHighway says "no", then the decision stands, because the city or town cannot afford the expenses.

The same can't be said for stop signs. Local governments can easily afford to pay for signs. However, the law that gave local government this right carried with it the responsibility to follow generally accepted engineering standards in locating stop signs. Most stops signs in the region appear to be placed at logical locations. They define who has the right-of-way, usually requiring traffic on minor streets to stop before entering onto a major or collector street. The responsibility for safely entering an intersection is upon the driver at the stop sign. Any crash is automatically blamed on the driver who passes through the stop sign.

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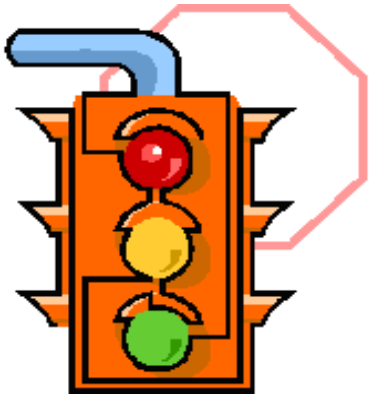
LTAP Local Technical Assistance Program

(413) 545-2604 http://www.ecs.umass.edu/baystate_roads

RED-LIGHT RUNNING LOW-COST SOLUTIONS FOR SMALL COMMUNITIES



One in three people claim they personally know someone who was injured or killed in a crash related to red-light running (RLR), according to the Federal Highway Administration (FHWA). This is similar to the number of people who know someone who was killed or injured by a drunk driver. Clearly, red-light running has become one of the leading causes of crashes in the United States. In fact, in 2000 there were 106,000 RLR crashes in the United States, resulting in 89,000 injuries and 1,036 deaths.

A recent answer to the problem has been automated enforcement systems, which are better known as RLR cameras. The typical RLR camera system begins recording pictures of a vehicle's license plate when it detects movement during a red-light period. Despite privacy and other concerns, the RLR camera approach seems to be a proven success in lowering occurrences of red-light running and related accidents. However, the initiation of these types of programs can be quite costly for a community.

For many small communities that don't have the resources necessary to implement an automated enforcement system, an RLR camera system is often an unrealistic ideal. It seems that much research has been devoted to RLR cameras lately, while the simpler, lower-cost approaches may have been overlooked. Nonetheless, options are available to communities looking to decrease RLR incidents on a smaller scale. Some of the potential strategies that have been discussed are improving signal visibility, increasing the likelihood of stopping, adjusting signal timing, and eliminating the need to stop.

In an FHWA study that reviewed RLR-related crashes, 40 percent of violators reported that they "did not see the signal" and 12 percent mistook the signal indication as green. Although this information was self-reported by violators and therefore questionable, it seems the number of RLR incidents could be reduced to some extent by improving signal visibility. Common techniques used to ensure signal visibility include effective placement of the signal, appropriate number of signal heads, adequate size of signal displays, use of visors and LED (light emitting diode) lenses, and use of black backplates. Recommendations by the Institute of Transportation Engineers in Washington, D.C. include using an overhead signal head for each approaching lane as well as a supplemental pole-mounted signal head to the side. The legal requirement is two signal heads, but research shows that more can be beneficial.

Second, in order to increase the likelihood of stopping, it is necessary that drivers be given adequate warning when approaching a traffic light. This is especially important in areas where traffic lights are infrequent. Common methods to give warning are signal ahead signs, advance-warning flashers, rumble strips, and pavement surface friction. These techniques can be effective; a pilot program in Bloomington, Minnesota showed a 29 percent reduction in RLR violations after installing advance-warning flashers.

These first two strategies have focused on unintentional violations. However, one survey conducted by the FHWA showed that respondents believed that over half of all traffic light violators do so intentionally. Though the exact numbers are hard to quantify because many drivers will not admit to doing so, more than 55 percent of Americans admit to running red lights. One of the strategies that addresses this concern is improved signal timing due to the fact that poor signal timing can cause a rushed driver to become frustrated and respond inappropriately. Appropriate cycle lengths for the intersection are crucial to driver respect of traffic signals. Going a step further, interconnected or coordinated sig-

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In the last 10 years we have seen a different use for stop signs. They are appearing at all approaches to an intersection. Labeled "All Way" or "Four Way", they make all vehicles stop before entering an intersection.

There are rules (called warrants) to follow when it is appropriate to install "All Way" stop signs. A four-way or all-way installation is considered when an intersection with a two-way stop is the site of numerous crashes or traffic congestion. The general guidelines are:

$ Where traffic signals are needed, four-way or all-way stops may be used as an interim measure until the signals are installed; or

$ On local streets where there have been a number of crashes that would likely have been prevented by an all-way stop (right angle crashes); or

$ Where large traffic volumes approaching the intersection from all directions are close to being equal; or

$ Where the horizontal or vertical curvature of the roadway approaching the intersection results in reduced safe sign-stopping distance.

Devices, (Section 2B.07, 'Multiway Stop Applications').

When these warrants are not met and the all-way stop signs are installed anyway, there are several dangerous consequences:

$ Disrespect - If a motorist perceives a stop sign as not serving any useful purpose, their respect for the sign and the officials approving and installing the signs is significantly diminished.

$ Non-compliance - If people see no reason for the sign they pay no attention to it.

$ Safety Hazard - Pedestrians are often lured into a false sense of security by assuming that motorists will stop. Other motorists enter the intersection on the same assumption, resulting in a collision.

$ Different Collisions - All-way stop signs may reduce the number of right-angle collisions but increase the number of rear-end collisions, especially if there is a high volume of traffic being required to stop unnecessaily.

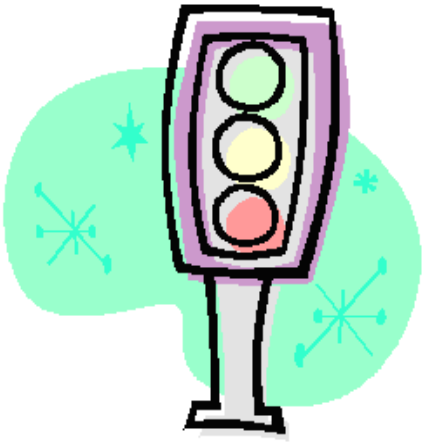
$ Noise and Air Pollution - Residents living near the intersection experience increased noise because of vehicles stopping and starting resulting in increased tire and engine noise. The stopping and accelerating increases automobile exhaust affecting air quality.

$ Detoured Traffic - If significant traffic delay results from stopping traffic on a major street, motorists will seek out alternatve routes around the stop signs. This places fast moving vehicles on residential streets because the drivers are attempting to make up lost time.

Did you know? „

National studies have shown that accident rates have actually increased at intersections where stop signs have been installed without meeting warrants or where circumstances did not justify the installation.

This article was provided by Roland Hebert, Transportation Planning Manager, Southeastern Regional Planning and Economic Development District.



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nal systems ("timed lights") are one of the best ways to limit stops, which in turn reduces the opportunity to run red lights. An Iowa study revealed that coordinated signal systems reduce the number of signal violations as well as improve traffic flow and efficiency. However, coordinated systems are only valid in areas with several successive traffic lights. Overall, though, if drivers are given the best signal coordination possible, they may not be as compelled to try to beat the red light.

Perhaps the most intriguing solution to red-light running is simply eliminating the need to stop. Though the idea may seem counteractive to the cause, methods such as removing unnecessary traffic signals or using flash mode during times of low traffic can actually reduce the risk of red-light running and its related crashes. In rural areas, high incidence of RLR behavior may indicate that local drivers perceive the signal as unnecessary and have chosen to ignore it. Granted, intersections must meet minimum traffic volume requirements in order to justify a traffic signal, but sometimes need decreases over time. If this is the case, officials should consider removing the signal and changing to a multi-way stop sign control or yellow flashers. Studies have shown that converting low-volume intersections to multi-way stop signs leads to reduced accident frequency at the intersection. During one study by the Department of Civil Engineering at Ryerson Polytechnic University, results indicated that replacing signals with multi-way stop signs is associated with a reduction in crashes of approximately 24 percent.

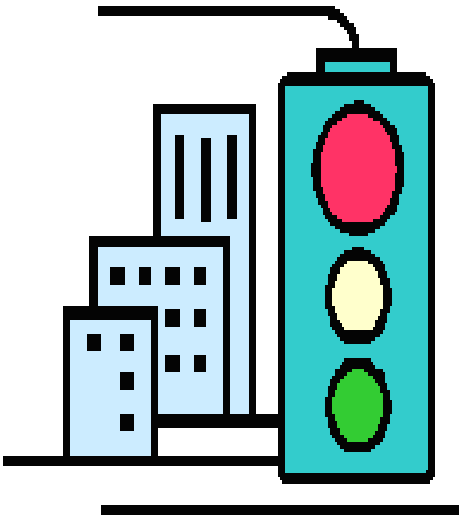
For the most part, the countermeasures listed here are low-cost and may be suitable for smaller communities. None should be deemed superior to the others; rather, they are all viable solutions that should be considered for use based on the situation.

Sources

Compiled with the assistance of Arlene Mathison, Minnesota LTAP librarian, Iowa State University Center for Transportation Research and Education and Iowa Department of Transportation, Highway Division. Red Light Running in Iowa: The Scope, Impact, and Possible Implications (Final Report). December 2000.

Federal Highway Administration Office of Safety. Stop Red Light Running Program Web Site.
http://safety.fhwa.dot.gov/programs/srlr.htm

Reprinted with permission of Minnesota LTAP, University of Minnesota, and written by Kari Seppanen.



AUDITS HELP STATES EXAMINE ROAD SAFETY

More than 42,000 people are killed every year on our Nation's road network. State and local transportation agencies are identifying different approaches to improving safety in their jurisdictions. One proactive approach is for transportation agencies to anticipate the crash potential and safety performance of the road network and identify potential safety issues before a crash pattern develops. To implement this approach, transportation agencies can undertake road safety audits (RSAs). Road safety audits are formal safety performance examinations of existing or future roads or intersections by independent audit teams. At the Federal Highway Administration (FHWA), officials are working to develop basic knowledge and tools for agencies interested in conducting RSAs.

Transportation agencies at the State, county and city levels have been performing road safety audits since 1997. To carry out an audit, an agency starts by identifying the existing or future road or intersection to be assessed and then selecting a team qualified to perform the audit at that location. The team then evaluates the safety of the road or intersection and performs a brief report identifying potential safety issues. The agency or owner of the road or intersection responds to the issues identified and lists the actions that will be taken or documents the reasons for not implementing a suggestion. Issues identified by RSAs can range from the very simple, such as the need to trim vegetation, to the more complex, such as the planning of the layout of roadway networks.

In addition to saving lives, RSAs may offer potential cost savings. Officials in Grand Rapids and Detroit, MI, have performed economic analyses of suggestions resulting from RSAs and consistently have found positive benefit-to-cost ratios. In South Carolina, the State department of transportation saved thousands of dollars after its first audit by connecting a design problem at the audit site.

The cost of performing an audit can vary and depends on the complexity and scope of the project. Agencies can save money by designating RSA teams that include experts from nearby jurisdictions, in exchange for providing their own experts to perform RSAs on neighboring roads. Alternatively, agencies can hire a consultant, which can cost anywhere from $2,000-$5,000 or more, depending on the scope of the RSA. To fund the RSA and implement the audit results, agencies also can seek Section 402 Highway Safety Funds, which support State highway safety programs designed to reduce traffic crashes and resulting deaths, injuries, and property damage. At least 40 percent of these funds are earmarked for addressing local traffic safety problems.

Prior to the RSAof this intersection, 2 traffic signal heads were suspended on a diagonal span with only one head hung over the travel lanes. There were 2 approaching lanes separated by a dashed white marking.

After the RSA 3 traffic signal heads were suspended on a box span of wire directly over the travel lanes with 2 signals for the through lane and one for a left turn lane. Signal timing was adjusted to add a protected left-turn phase. In addition, pavement markings now show a separate left-turn lane at the intersection.

A report by the National Cooperative Highway Research Program, *Roadway Safety Tools for Local Agencies*, contains an **RSA toolkit for local agencies that includes forms to use on field visits and a sample checklist of items to consider when conducting an audit.** To download the report, visit http://trb.org/publications/nchrp/nchrp_syn_321.pdf. FHWA also is developing guidelines and a checklist for use by agencies conducting RSAs. In addition, **the National Highway Institute offers a 2-day course on road safety audits.** For more information visit www.roadwaysafetyaudits.org or contact:

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Representatives from the nation's 57 LTAP centers, as well as a number of international centers gather at the general session.

Getting to the airport took longer than we expected.

Postcards from New Mexico

Chris and Matt travel to the National LTAP Conference

NEW PERFORMANCE MEASURES

One of the new endeavors for the entire LTAP/TTAP national process will be to introduce performance measures which will assess the value of the program to all stakeholders. Implicit in this approach is the requirement to constantly reassess who our customers are within any given function to insure value is being added and resources are appropriately managed. The future of the program will be determined by the twin concepts of accountability and measurement.

KIRKPATRICK EVALUATIONS

Obtaining data on how our partners and customers perceive the value we deliver is instrumental to future efforts to maintain and augment the LTAP/TTAP successes. An initial way of collecting this data will involve a Level II evaluation of services provided via pre/post survey tools. This learning level measures knowledge, skills, and attitudes using workshop exams. Examples of testing include role playing, verbal Q & A, written tests, or job simulation evaluations. The method provides objective data on both student comprehension and training efficacy.

LTAP 101

Program Coordinator, Matt Tassinari, enjoyed meeting many compatriots from the other 49 states and attending a primer class on LTAP operations. Long-time staffers at LTAP centers introduced themselves as "addicts" because of their strong commitment to the program's mission. Matt especially liked the acronym game that required identification of a variety of transportation related agencies and terms.

The cars don't rust!

HOW GOOD ARE YOUR LISTENING SKILLS?

"Do you know what your problem is? You don't LISTEN!" Chances are you have either said this to someone -- supervisor, subordinate, co-worker, child, spouse -- or you have been told this by some, or all, of the above. Our relationships in all aspects of our lives depend on communicating with one another in some way.

In our daily life we know that communication depends more on spoken words than it does on written words. The effectiveness of the spoken word hinges not so much on how people talk as on how they listen. Developing good listening skills requires that we understand why we are poor listeners in spite of our best intentions to grasp one hundred percent of what we are told.

People in general do not know how to listen. We have ears to hear every word being spoken but have failed to acquire the skills to listen effectively. Tests performed at the University of Minnesota on thousands of students and professional people led to an amazing discovery. The study found that immediately after the average person had listened to someone talk, s/he remembered only about half of what was heard. This was true no matter how carefully they thought they were listening.

The problem lies in the fact that the average rate of speech is about 125 words per minute. The brain, and consequently our thought process, operates at warp speed compared to the slow rate of speech. This large differential between the rates of speaking and thinking leaves a tremendous amount of spare time for thinking while the speaker is plugging along at a mere 125 words per minute. It's how we use this spare thinking time that holds the answer to how well we can concentrate on the spoken word. It is in the nature of people to allow, and sometimes welcome, outside thoughts to fill the space between the slowly-arriving words of the speaker.

How many times have you realized, while supposedly listening to someone who thinks s/he has your undivided attention, that you have become lost in one of these "sandwiched" thoughts and had to ask forgiveness and "Would you repeat that, please?" While continuing to listen to the speaker, this mental sidetracking can result in longer and longer lapses in reception and more and more of the message is missed. So now the speaker is finished and the listener has comprehended less than half of what was spoken.

What can be done to help us listen more effectively? There are four components of effective listening. The first, and most obvious, is that we must *hear* what is being said. Second, we must make sure that we clearly *understand* the message. The third component is that we must *evaluate* the facts or directions as we understand them. Finally, we can now proceed to *act* on what we have been told. Most people go from hearing to acting without going through the critical intermediate steps of understanding and evaluating what has been conveyed.

Source: The Power of Effective Listening in Management, by Frank DiSilvestro, Indiana University. This article was reprinted with permission from The Connection, South Dakota LTAP, Winter 1999 and written by Jim L. Hennen, South Dakota LTAP Western Satellite Coordinator.

Five Tips for Better Listening

If exercised faithfully, these will make for fewer miscommunications and greatly improve your listening skills:

Intend to Listen.
- Do not try to listen while engaged in another activity. Both the listening and the other activity will be diminished.
- Maintain comfortable eye contact.
- Do not interrupt.

Concentrate.
- Paraphrase. Restate, giving the same meaning in a different form.
- Carefully try to anticipate where the next thought is coming from and what conclusion this is all leading to.

Control Emotions.
- Remember that as emotions heat up, listening all but disappears.

Check for understanding.
- Example: "To make sure I have this right, I'll be in Room 110 at 7:30 a.m. with a videotape and 12 hand-outs."

Use memory aids.
- Take brief notes of key points.
- Avoid trying to write too much.
- Remember the danger of trying to do 2 things at the same time.

Congratulations to the newest Baystate Roads Scholars on your fine achievement. Keep saving those certificates and you, too, could be listed here!

Baystate Roads Scholar!

George Chasse
MA Dept. of Conservation & Recreation
Robert E. Lee
Town of Pepperell
Ronald Skroczky
City of Westfield

in this issue...

The Baystate Roads Program, which publishes *Mass Interchange* each quarter, is a Technology Transfer (T2) Center created under the Federal Highway Administration's (FHWA) Local Technical Assistance Program (LTAP). This newsletter is prepared in cooperation with MassHighway and the United States Department of Transportation Federal Highway Administration. FHWA is joined by Mass Highway, College of Engineering at the University of Massachusetts/Amherst, and local public works departments in an effort to share and apply the best in transportation technologies.

In addition to publishing *Mass Interchange*, the Baystate Roads Program facilitates information exchange by conducting workshops, providing reports and publications and videotapes on request, and offering one-to-one technical assistance on specific roadway issues. Because the program relies on input from many sources, inquiries, articles, and ideas are encouraged.

LTAP Local Technical Assistance Program

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