

HOW ROAD AUTHORITIES AND INSURANCE COMPANIES SHOULD WORK TOGETHER TO IMPROVE HIGHWAY SAFETY

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INTRODUCTION

In Europe a relatively new organization is working to make driving safer, by identifying and disseminating to the public information on roadways with crash rates above the average for that type of facility. This organization is the European Road Analysis Programme (Euro RAP). It is supported by a group of motoring organizations throughout Europe, primarily motorist associations similar to the U.S. A.A.A. It receives its financial support from the British group AA Motoring Trust, the European Commission, the FIA Foundation for the Automobile and Society, and Toyota Motor Europe. Euro RAP has two objectives; as stated on the Euro RAP website these are as follows:

- To reduce deaths and life-threatening injuries on Europe's roads by systematically assessing risk and identifying safety shortcomings that can be addressed with practical road-improvement measures
- To put assessment of risk at the heart of strategic decisions on route improvements, crash protection and standards of route management

There are approximately 40,000 deaths per year (similar to the number in the U.S.) on the roadways in Europe. The goal of the European Union is to reduce this amount to half. This level of reduction would be a challenging goal for the U.S., and one that would require a heavy commitment of time and energy on the part of transportation agencies and the traveling public. Bringing the resources and enlightened self-interest of the insurance companies into the mix just might make this goal doable.

Both road authorities, that is, transportation agencies such as Departments of Transportation or DOT's, and insurance companies have an interest in the safety of the motoring public, although the focus of each may be somewhat different. Each DOT of course is focused on its own state; within its state the focus is generally on the safety of all roads with an emphasis on identified problems or problem areas. These are generally, although not always, based on statistical analyses of crashes. For example, a DOT may decide to install guard rail in areas where there have been an above-average number of crashes involving roadside objects. Conversely, insurers are more focused on their clients' safety. An example of this would be the improvement of a problem intersection, funded by an insurer that has experienced high casualty losses at that intersection. What must be considered at such a trouble spot is that a single, very serious crash may represent a high dollar loss yet be at a location without other significant crashes. In addition, there are issues related to the random nature of crashes and to the possibility of litigation. In each case these improvements benefit the entire motoring public, not just the subset of Company B's insured. However, working together to maximize the overall benefit to the public should be more effective and provide more value for the safety

investment. The purpose of this paper is to present some methods for road authorities and insurance companies to work together for the greater good.

IDENTIFYING HIGH-RISK ROADWAY SEGMENTS

The first method by which insurers and DOT's could work together is in identifying and publicizing those roads on which motorists would be at greater than average risk of being involved in a serious (i.e. fatal or major injury type crash). This would be similar to Euro RAP; the insurance companies' involvement would be in providing the means of notifying the public of the location of these roadways and possibly in supporting the program to identify the risky roads. There are several ways an insurer could notify its policy holders of high-risk roads. Some of these are as follows:

- Postings on insurance company websites of high-risk roads
- Emails to customers advising them of newly identified segments of high risk
- Work with mapping providers such as Map Quest to advise customers of high-risk routings and to provide safer alternatives
- Mailing risk maps to policy holders at the time of policy renewal

The public would benefit from this information by having the knowledge to make better or at least better informed decisions as to travel routes to take or avoid. The DOT's would benefit from having (possibly) less traffic on their high-risk roads, therefore likely having fewer crashes on those roads. They might also benefit from having additional support for improvements. The insurance companies would benefit from reducing their casualty losses, as well as from an improvement in public perception of their operations.

Work zones are frequently high risk areas. As such the motoring public could benefit from an automated system of proximity warning devices in vehicles, that would flash a warning light (for instance) when approaching a work zone or a high-hazard location.

In Europe and Asia the road authorities post "black spot" warning signs, to identify to the motoring public those locations that have experienced above-average numbers of crashes, in the hope that drivers will take extra care in the vicinity of these locations. Although there is a potential for litigation, there could be a benefit to such a program in the U.S.

SUPPORT FOR ROADWAY IMPROVEMENT PROJECTS

Insurance companies could provide funding to help DOT's mitigate problem areas and could help DOT's secure additional monies from their legislatures or from the Federal government. This would be similar to what some companies now do, although the current efforts tend to be focused on those areas that are of interest to the individual company (areas of high casualty loss). There have been a number of strategies employed in Europe to improve roadway safety. Some of these that may be applicable to the U.S. include the following:

- Installing cable guard rail along the centerline of two-lane roads, thereby reducing the incidence of head-on crashes.
- Providing more forgiving roadsides, by installing guardrail in areas where there have been high numbers of run-off-the-road crashes
- Replacing high-speed signalized intersections with roundabouts
- Separating vehicles from pedestrians in urban settings

The public would benefit from having an independent advocate for highway improvements, one whose vested interest is more or less parallel to that of the citizens. The DOT's would benefit from having independent support for their roadway improvement projects. The insurance companies would benefit from having reduced casualty losses.

AUTOMATED SPEED REGULATION

Speeding is often cited as a leading factor in crashes, possibly responsible for as much as 30% of fatal crashes and 12% of all crashes. Speed limits generally are set to strike a balance between mobility and safety; high enough to move people and goods quickly but not so high as to unduly reduce roadway safety. Insurance companies could provide the means and incentives to promote better observation of speed limits by supporting automated regulation of vehicular speed. An insurer would do this by establishing a program under which drivers who participate receive significant reductions in their insurance premiums; their participation would require them to allow the installation of devices in their cars that would monitor their actual speed and would report to their insurance company if they exceed speed limits. The insurance industry could lobby to get the required legislation to make this possible, and could also thereby address privacy concerns. Physically the program would involve the following:

- In-vehicle GPS-based system to measure speed and to compare the vehicle's speed to the speed limit in the area
- Inter-active speed limit signs (perhaps via low-power radio) that would inform the car's speed system as to the speed limit in the area.
- Periodic reporting by the speed system to the insurance company

There are potentially a number of benefits from the use of an automated speed control system, both to the driver and to the general public. Possible benefits are as follows:

- For the driver the system would reduce the driver workload, especially in unfamiliar areas, by removing the need for the driver to keep track of speed limits. It would be useful in corridors where speed limits change frequently.
- If the bulk of the drivers have these systems in their cars, it would be possible for the regulatory authorities to set limits more reasonably, with the assurance that there would be better observance of these limits.
- In turn, this could mean that the police would not have to spend as much time in routine speed enforcement, freeing the police to focus on risky driving behavior such as reckless driving, impaired driving, and speeds greatly in excess of limits.

- In urban corridors it would be possible to have variable speed limits, set to maximize vehicle flow at times of high travel demand
- As a result, there may well be some environmental benefits in terms of improved air quality from the smoother traffic flow

Institutionally there are likely to be issues with such a system, although at least some of these should be avoided because the insurance company would be setting up the program rather than a public agency. Some of the possible issues include the following:

- The issue of privacy would be foremost among these. There would have to be some safeguards to ensure that personal information would be protected and that it could not be used for any other purpose (such as locating an errant spouse).
- There might be some objection to the premium reduction by those who would not install the system on their cars, or by those whose driving patterns cause their premiums to increase.
- If the cost of the system were not minimal, there could be some objection to the cost by advocates for lower income persons, because they might not be able to afford the system.
- The cost of developing and installing the new generation of radio-equipped speed limit signs could foster some resistance on the part of the DOT's.

This sort of system could also become part of a pay-as-you-go insurance program, where a person's cost of insurance would be individualized based on that person's driving pattern in terms of speed, annual mileage, and the riskiness of the route choices made.

The public would benefit in several ways from the wide spread use of an automated speed control system, including improved safety, lower (and perhaps) fairer insurance costs, lower stress while driving, and possibly an improved physical environment. The DOT's and the insurance companies would benefit from improved safety. For the insurance companies' improvements in safety result in reduced casualty losses, which translate ultimately to reduced premiums for all drivers.

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