

Measures to increase traffic law acceptance: some strategic considerations

Paper presented at the 5th European workshop 'New developments in traffic safety research', Bern, May 2-3, 1996

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Author(s): Dr. Ch. Goldenbeld
Research manager: Drs. P.C. Noordzij
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SWOV Institute for Road Safety Research



Stichting
Wetenschappelijk Onderzoek
Verkeersveiligheid
SWOV
Postbus 1090
2260 BB Leidschendam
Duindoorn 32
telefoon 070-3209323
telefax 070-3201261

Summary

The set of traffic laws and rules intends to maximize the possibilities for free movement in the traffic system, while at the same time safeguarding road safety. Acceptance of traffic laws depends in part on properties of the laws and rules themselves that determine how they will be perceived or understood by the public.

In the first part of the paper, the focus will be on the criteria and qualifications the laws and rules themselves will have to meet, if any effect on road user behaviour is to be expected.

Next we will consider in a general sense the various measures, e.g. publicity, enforcement, education, that may accompany or support a traffic rule or law. It will be argued how important it is to agree on an a priori strategy for implementing various measures. As an example of such a strategy, a multi-phase model of measure implementation will be presented, describing a sequence of measures intended to increase law acceptance, depending upon the situation at hand.

Finally, in the last part of the paper problems with traffic law acceptance and possible remedies of the foregoing will be presented with respect to five spearheads of national policy (drinking-and-driving, seat belt use, speeding, young moped riders, and heavy traffic).

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1. Introduction

“Motorists have shown from the beginning that they will not comply with any law which causes them inconvenience (such as the speed limit), or which, though easy to obey, they are not forced to obey (such as the regulation for number plates). If that is to be their attitude, let us accept it for the time, and counter it by increased police activity, especially by the provision of more mobile police, until it is brought home to their minds that compliance with the law is their necessary contribution to the common weal.”

Frank Elliott in *The Times* (January 1934)

Essentially, traffic rules are prescriptions given by the government to direct the behaviour of road users, with the additional power to force penalties on road users who violate these rules. The purpose of this paper is to review several strategic options that may be useful in increasing the acceptance of traffic laws and rules.

Acceptance of traffic laws depends in part on the properties of the laws and rules themselves; this determines how they will be perceived or understood by the public. As with all legislation, the original intention was to limit the individual freedom of road users only if necessary. With the evolution of the traffic system and its unavoidable growth into a heterogeneity of roads and scenes, the set of rules in the Netherlands, and undoubtedly also in most other European countries, became very comprehensive.

In the second chapter of this report, the focus will be on the criteria and qualifications the set of laws and rules themselves will have to meet if a behavioural effect is to be expected. One strategy is to revise the existing legislation to abolish unsafe or ineffective rules and to make the remaining rules more comprehensible or effective.

In the third chapter, we will consider in a general sense the various measures, e.g. publicity, education and enforcement that may accompany and/or support a traffic rule or law. It will be argued how important it is to agree on an a priori strategy for implementing various measures. As an example of such a strategy, a multi-phase model of measure implementation will be presented, describing a sequence of measures intended to increase law acceptance, depending upon the situation at hand.

Finally, in chapter 4 we will direct our attention to five spearheads of national policy (drink-driving, speeding, seat belt use, young moped riders and heavy traffic). These spearheads will be discussed in terms of the most pressing problems concerning traffic law acceptance and possible remedies.

2. Laws and rules

2.1. Introduction

In traffic, as in other areas, laws (are intended to) regulate behaviour. The function of road safety laws is to save lives and prevent suffering. Thus, they should be generally accepted by the public, provided that public is well informed about the beneficial effects of these laws and regulations. In our view, a road safety regulation is likely to be accepted if that law is generally considered to effectively reduce an unwarranted road safety risk against acceptable social and/or personal costs.

Whether road users choose to comply with or violate traffic rules depends on the benefits and disadvantages they associate with compliant behaviour. This process of choice, from a theoretical point of view, is often represented as a process of rational decision making in which the pros and cons of behaviour and behavioural alternatives are weighted and summed and compared.

In practice, many choices will not conform to the criteria of the fully rational model. In traffic, as in other spheres of life, people tend to make shortcuts in mental functioning, relying on habits, on incomplete information, or on 'hunches', 'intuitive judgments' or 'mindless' imitation of other people's behaviour to make certain choices. It follows that failure to follow an existing or a new traffic regulation should not be automatically ascribed to indifference to the rule or to road safety. It may be that a rule does not agree easily with the information-processing capabilities or habits of road users. This brings us to the cognitive-informational conditions for the behavioural effectiveness of a law or rule (§ 2.2). Revision and deregulation of road safety legislation is one strategic option to further enhance traffic law acceptance (§ 2.3 and 2.4). In the end, the factors that decide whether a law or rule is accepted may largely reside in social processes of imitation, communication and the setting of standards amongst road users (§ 2.5).

2.2. Conditions for the effectiveness of law

The behavioural effectiveness of a law depends upon a number of factors. First, the law or rule and its associated meaning should be known to road users. Second, it is vital that, besides having an abstract or concrete knowledge of the laws, road users understand the importance of the law or rule for their own road safety or that of others.

For the *knowledge aspect*, it is important that the law should fulfil certain inherently correct qualifications, e.g. (Noordzij, 1976):

- the law is easy to understand for all road users;
- the law is easy to follow;
- the law is not in contradiction or conflict with other laws;
- the law is not in conflict with situational prerogatives;
- the law makes it easy to identify any violation of the law.

Road users tend to develop habitual behaviours that use a minimum of information processing time. Therefore, a rule should be easy to understand

and give clear prescriptions for behaviour. A knowledge and understanding of the law should be accompanied by some notion of the intrinsic or communal value of the law or rules. That is, the road user should have a personal or social interest in displaying compliant behaviour. The one condition that is paramount in this respect is that *the law has a clear relationship to road safety*.

Both from a scientific point of view and from a drivers' subjective point of view, it would be ideal if it could be established exactly to what extent compliant behaviour contributes to road safety. Knowledge about the safety benefits of rules is important for several reasons. First, this knowledge can be used to convince the public of the importance of the law. Second, on the basis of this knowledge, an informed decision can be made about the level of secondary support for the law (publicity/enforcement/education). Third, this knowledge enables us to weigh the law in terms of costs/benefits and against possible alternatives.

From a strictly *scientific point of view*, it often proves a surprisingly difficult task to verify the exact relationship between the behaviour of road users and road safety. Even for drink-driving, which is generally considered an important cause of accidents by professionals and lay people alike, the danger can only be roughly estimated. In general, it is often difficult to disentangle the contribution of one rule or measure from other simultaneous 'system' inputs.

Not only on the basis of scientific evidence, but also *from a layman's perspective*, the relationship between behaviour and road safety is difficult to verify. As Fuller (1988) points out, the set of rules which the driver brings into the driving situation may be inconsistent with the contingencies - the antecedent behaviour outcome links - which the driver actually experiences. "An example would be a driver for whom time was valuable who slowed down in a speed-limit area but experienced no safety or other advantage from the behaviour. The rule to reduce speed seems at variance with the actual contingencies" (Fuller, 1988; p. 532).

In other words, road users learn the use of the road mainly by experience, but they must learn safety by less direct means, because accidents or near-accidents are rare events that do not provide road users with sufficiently frequent direct feedback.

2.3. Revision of legislation

Many countries have sets of laws and rules that were conceived several years ago. A revision of traffic law legislation may be used to enhance the acceptance of traffic laws. According to Noordzij (1988), the effectiveness of any set of traffic rules can be improved in a number of ways, starting with the revision of separate rules. Each rule should be checked to assess whether the situations to which it refers are outdated, whether the arguments for the prescribed behaviour still hold and whether this behaviour can be prescribed in more detail. A decision has to be made whether the rules have to be kept simple and small in number, or more specific for particular groups of road users and particular situations.

While the first option has the advantage of being simple, the prescription of the behaviour has to be either general and vague or more precise but rigid. The second option results in a more comprehensive set of rules, each of which is better suited to the diversity of actual traffic situations.

A more fundamental decision pertains to the question of whether traffic rules should continue their function as the most comprehensive and authoritative set of prescriptions for the behaviour of road users. If this function is to be continued, several improvements can be made (Noordzij, 1988). Rules could be made more accessible by presenting them in separate sections, based on different modes of transport and different types of roads. They could be presented more convincingly by starting with a number of articles explaining the intentions of the rules in general terms and by providing arguments for individual rules.

This could be completed with some form of priority ranking, which is likely to lead to better compliance with the most important rules. It could even be considered to include rules that do not carry the threat of a penalty if violated. Compliance could be further improved by translating the legal rules into action patterns that can be trained.

If it should be decided to restore the original function of the traffic rules (i.e. to use the authority and power of government to limit the freedom of road users only where really necessary), then only the most important rules would need to be upheld. In this case, it is desirable to develop a separate set of prescriptions for the behaviour of road users to be used as a basis for training.

2.4. Deregulation

Recently, an attempt was made in the Netherlands to deregulate the set of traffic rules. The deregulation effort was justified by the large number of very specific rules and the widespread disregard and large-scale violation of these rules. Also, the extensive use of traffic signs which dominate and sometimes confuse the traffic scene was a strong argument for deregulation.

On November 1, 1991, a new Traffic Code (RVV 1990) came into force in the Netherlands. The new legislation represented a slimming-down of the old rules dating from 1966. Some rules were scrapped, while others were simplified, amended or enhanced. The intention was to realise a regulation with fewer rules and fewer traffic signs on and alongside the road.

The envisaged consequence was that road users would commit fewer offences and behave more responsibly and hence more safely.

The introduction of the new Traffic Code was accompanied by a flanking policy aimed at road users, road authorities and road safety organizations.

With respect to the road users, a mass media campaign was organized, consisting of daily television spots and the distribution of about three million brochures. In each Dutch province, the local road authority organized additional promotional activities.

Six months after the introduction, more than 85% of the Dutch population knew about the existence of the new legislation, but surprisingly few road users could actually name two or three rules that had been changed. In a survey study using answers to photographs of traffic situations, it was found that incorrect applications of old and new rules concerned priority situations between motorists and pedestrians, priority rules at various types of roundabout, priority when turning right at a red light, maximum speed on roads outside the built-up area and the use of the hard shoulder.

It was concluded that future information campaigns should specifically address incorrect applications of the rules which could result in dangerous situations, and that these campaigns should not only be aimed at the

meaning of a traffic rule, but also visually illustrate its application in various situations.

2.5. Traffic law acceptance and social standards

If the relevance of a traffic law or rule is difficult to demonstrate, both from a scientific perspective and on the basis of personal experience, it may often be the case that social communication and the development of social standards will ultimately decide the question of relevance and acceptability. In a recent European survey study, it was concluded that differences in preferences for laws and measures closely followed actual differences in legislation (Sartre, 1995). It may be asked how the close correspondence between official legislation and public attitudes and opinions has come about. Did public opinion or social climate lead to the political acceptance and implementation of specific laws? Or did public experience with the law and its results lead to endorsement of its underlying message?

Following the lead of several authors (e.g. Andenaes, 1988; Snortum, 1988), we surmise that both these processes were at play. In the words of Snortum: "Law is both a cause and an effect of 'moral climate'" (Snortum, 1988; p. 206). Generally, there will be a base of social support for a measure before its actual enactment; after its implementation, social support for the measure may grow even stronger as a result of experiences with related enforcement.

The law may even create a new social standard. The creation of such a new standard is certainly not an automatic process, but depends in part on the degree to which the law is perceived as reasonable, is promulgated by legitimate authority and is impartially administered (Andenaes, 1977). Traffic laws always constitute a compromise between the public interest and individual freedom. It should be clear for all road users why a particular law is the best compromise. If road users envisage one or more alternatives for an existing regulation, the regulation can lose its legitimacy. Especially in the case of speed limits, it is difficult to convince road users that the existing speed limit is the best compromise between freedom and safety.

For some laws, e.g. the obligation to use daytime running lights or a standard speed limit of 30 km/h in residential areas, the base of support is strong in some specific countries, but very weak in many others (Sartre, 1995). Obviously, an initial broad base of support for a particular law would have to exist before a discussion about its acceptance and implementation can be useful. However, a broad base of support does not necessarily mean majority support. It is conceivable that moderate support for a certain law can be enhanced by persuasive communication or by experiences with, or feedback about, the positive results as a consequence of the new measure (e.g. the experience with the introduction of a 30 km/h limit in the Austrian city of Graz as described by Wernsperger & Sammer, 1995). Many road users will follow the behaviour of other road users because they see others as an important source of information on how to behave on the road in a normal or intelligent way. Initial compliance with a law or rule will tend to elicit further compliance, provided this behaviour is associated with positive experiences.

The other side of the coin is that laws supported by the majority may lose their appeal if they are not strictly and consistently enforced. If road users observe that many other road users violate a certain regulation without experiencing any repercussions, they may come to doubt the necessity or the reasonableness of the new regulation. As one researcher put it: "Normative behaviour becomes attractive if road users perceive that most road users comply with it, and that those who do not comply are confronted with the negative consequences." (Rothengatter, 1991; p. 93.) Obviously, there is a limit to what we can accomplish with new legislation and stricter sanctions. Legislation and regulations handed down by central or local government do not always have the desired effect. If road users do not assume some personal responsibility with respect to the legislation, regular violations of the rules may be the result. If the police are unable or unwilling to effectively enforce legislation, any remaining credibility and legitimacy of the policy will be altogether lost.

3. Supporting measures

In this paragraph we will briefly consider the most familiar measures that are intended to support the function of a law or rule: road safety education, including special educational programmes, mass-media publicity and police enforcement.

3.1. General aims for road safety education

Road safety education encompasses a broad range of activities, such as specific school programmes, driver training for novice drivers, driver improvement courses for repeat offenders, supplementary training for interested drivers and regional or nationwide publicity campaigns. One of the main subjects of road safety education is 'knowledge of traffic rules'. According to a recent survey of driver training among 29 European countries, 'traffic regulations' and 'rules of behaviour' are mandatory subjects for theoretical driver instruction in most countries (Neumann-Opitz, et al., 1995). The factual driver task of 'taking account of regulations' is a requirement in practical driver training in most countries.

The knowledge of traffic laws is of course a prerequisite for following the laws. Even if road users have a good understanding of the law and the importance of the law for road safety, it may still be difficult to apply the law correctly in a specific situation, or they may still have misconceptions that lead them to unknowingly or knowingly violate the law. One example is the legal limit in relation to drinking and driving. In a laboratory study using reactions to hypothetical choice situations, Jaccard & Turrisi (1987) identified several misperceptions in the estimation of blood alcohol levels (relative to the legal limit): "A major source of error appears to be the tendency for individuals to underestimate the impact of a drink at longer time periods of consumption (e.g. two to three hours). In addition, there is a tendency to downplay the effects of beer and wine relative to mixed drinks and to underestimate the consequences of a moderate number of drinks. Subjects in this experiment failed to understand that the impact of increasing one drink remains approximately the same whether the number of drinks is increasing from two to three or from three to four drinks, and also that the impact is approximately the same during early times of consumption as opposed to later times of consumption." (Jaccard & Turrisi, 1987, p. 141).

The difficulties with applying a law or rule to a specific situation should be specifically addressed by road safety education. To this effect road safety education should aim as much as possible for an integration of theoretical insights and practical exercises.

In essence, traffic laws are the embodiment of our concern for safety. It may be expected that the general attitude to traffic laws is linked to the concern for personal (and social) road safety. Some widespread erroneous beliefs (e.g. Carthy, et al., 1995) tend to undermine the concern for road safety, for example:

- a. The lack of concern may be due to individuals perceiving their own personal risk as relatively small.
- b. Most drivers consider their standard of driving to be above average.

- c. Many drivers consider accidents to be random, chance events that are unavoidable.

Erroneous beliefs about accident causation essentially undermine road users' sense of active responsibility for their own safety and that of others. It is this attitude of responsibility which should be addressed and encouraged in road safety education and driver training. To this effect road safety education should enhance a social perspective on rule following behaviour. This can be done using active learning methods such as role playing, group work and the exchange of experiences through group discussion. Fortunately, these methods are already part and parcel of driver instruction in several European countries (Neumann-opitz et al., 1995).

3.2. The role of specific educational or public information programmes

It has been shown that enforcement campaigns related to alcohol-impaired driving, seat belt use and speeding became more effective when accompanied by educational or public information campaigns educating the public on the importance of the enforcement (e.g. Zaal, 1994). Educational or public information programmes that precede actual enforcement can lead to short-term behavioural change that is later consolidated by actual experiences of enforcement and social modelling.

Educational and public information programmes can support acceptance of traffic laws in the following ways (Williams, 1994). First, they may transfer knowledge about the existence of laws, their provisions, and their penalties, in ways that increase their deterrent effect. Second, they may transfer substantive knowledge about the problem behaviour (e.g. drinking-driving or speeding) and its potential negative consequences (e.g. accident, punishment). Third, they may contribute towards bringing about a change in social standards.

It is not only the case that the deterrent effect of law is enhanced by educational or public information programmes. It is also important to note that in the absence of such programmes, the effect of laws may be limited or even absent.

Educational and public information programs can profit considerably from a thorough preparation guided by some model or a plan. Elliott (1993) evaluated mass media road safety programs by use of meta-analysis. He found that the more successful mass media programmes were based on a theoretical model or on qualitative and/or quantitative research, used a persuasive approach rather than a purely informative approach and used messages with emotional appeal rather than rational argument. Interestingly, qualitative research was found to be more strongly associated with campaign effectiveness than quantitative research.

A specific overall planning tool for improving the effectiveness of educational and public information programmes is social marketing (OECD, 1990). Social marketing is a potentially fruitful approach to road safety that relies heavily on planning. A social marketing plan is first based on an analysis of the market. This requires a situation analysis which provides information about the problem to be tackled, the operational environment, the people involved and the subjects addressed. Furthermore,

the market is divided into sectors and target groups. Finally, clear objectives are defined to ensure consensus regarding the progress of the work and to facilitate the evaluation of the results. It should be stressed, in accordance with the OECD report, that social marketing is not an alternative for existing strategies, but a complementary approach that may enhance the effectiveness of other activities (engineering, enforcement, education) because it focuses on the road user.

3.3. The role of enforcement

Police enforcement of traffic laws is intended to enhance acceptance of laws through the processes of general and specific deterrence. General deterrence can be described as the impact of the threat of legal punishment on the general public, while specific deterrence can be seen as the impact of actual legal punishment on those who have been apprehended.

The effectiveness of enforcement depends upon the nature of the rule in question. Veling (1991) distinguishes between rules for single behaviour (e.g. seat-belt use) and multiple (continuous) behaviour (e.g. driving speed, choice of following distance, choice of position on the road), and between unconditional rules (e.g. rules concerning speed limit, seat-belt use, drink-driving) and conditional rules (e.g. priority rules or rules on following and overtaking). Merging these two distinctions leads to the typology presented in *Table 1*.

	Single	Multiple
Unconditional	seat-belt	speed limits
	drink-driving	
	parking restrictions	
Conditional	fatigue	following distance
	priority	overtaking

Table 1. *A typology of traffic laws.*

The combination of establishing, enforcing and publicising the law has been successful in influencing single, unconditional behaviour. The best examples are probably the enforcement of laws concerning seat belt use and helmet use by moped riders.

Police enforcement of unconditional rules concerning single behaviour has been shown to be very effective and requires relatively little police effort. Police enforcement of unconditional rules concerning multiple behaviour, e.g. enforcement of speeding, can also be effective, but often involves widespread, continuous enforcement operations.

Effective measures directed at conditional rules, especially those concerning multiple behaviour, have yet to be developed and tested.

The problem in this case is to agree on what is dangerous behaviour (e.g. following too closely, dangerous overtaking) and what would constitute appropriate legal evidence in each case. In all probability, the only way to achieve any breakthrough in this field is to develop a monitoring system for individual driving behaviour such as speeding, sudden braking, or going

through a red light. It remains to be seen whether public or political support for such monitoring systems can be stimulated.

Aside from deterring road users from committing violations, the police may also increase the acceptance of traffic laws in a number of other ways. They may give the right example in traffic and may actively inform the public about police policy in matters of road safety and the reasons behind specific police activities. Furthermore, the police should invest some time in informal communication with road users and pay attention to complaints or suggestions about road safety. Also, they can give practical or symbolic support to actions or activities of other road safety organizations. Last but not least, the police may substitute traditional punishment with alternative sanctions that may appeal to the public and encourage them to change their attitude.

3.4. Model of measure implementation

Several authors (e.g. Vulcan, 1990) stress the importance of problem identification and analysis as the first step in a strategic approach to facilitate the acceptance and implementation of road safety measures. However, a universally accepted approach towards problem solving seems to be lacking. The professional background of the researcher or policy maker seems to be an important determinant in the outlook on the problem. The engineer will be inclined to inspect several road safety statistics, the behavioural scientist may also take a look at the behaviour and attitudes of road users, while the city planner may look at the use of space overall. The introduction of new rules or measures should be based on an adequate problem analysis and be explicitly guided by a plan. Without a planned approach the quality of the decision-making process will be less and the operations designed to support a law or rule may take on a haphazard character.

In general, compliance with a rule can be achieved by addressing groups of road users, organised on a sliding scale according to their willingness to comply. Specifically with regard to their behavioural response to a new rule or law, the following groups of road users may be distinguished (Noordzij, 1995):

- a. One group of road users will already show the desirable behaviour as prescribed by a rule or measure.
- b. One group of road users will be fairly indifferent to the rule or measure but nevertheless seek to avoid trouble with the authorities.
- c. One group of road users will be disinclined to follow the rule spontaneously, but will do so if some evidence of enforcement is given.
- d. One group of road users will think they can avoid enforcement of the rule or measure or will tend to test the limits of enforcement.
- e. One group of road users will accept a small risk of punishment for rule infraction.
- f. One group of road users will be almost completely indifferent or insensitive to the law, enforcement or punishment.

A planned approach to increase the acceptance of a law or rule can take the following consecutive steps (Noordzij, 1995):

1. *Recommendation or rule*

Even if there were no rules, there will always be a group of road users who already comply with the proposed rule, either because they feel this is the right thing to do, or because they do not feel the need for other behaviour. A first step to increased compliance is to introduce a formal rule. Based on the authority of the government, this may be reason enough for some road users to comply, as long as the rule does not interfere with personal interests. For others, public information is needed to explain why compliance with this rule is in the interests of road safety. These road users are convinced by argument; for them, the threat of a sanction is irrelevant.

2. *Punishment for violation*

More road users will be convinced of the need to comply if a sanction is associated with violation of the rule. Simply put, they want to stay out of trouble. For this group, actual enforcement is not yet necessary as long as they realize that the police is able and willing to enforce the rule if they have to.

3. *Evidence of enforcement and punishment*

The next group of road users will need proof of actual enforcement before they are willing to change their behaviour and comply.

4. *Enforcement with random probability of detection for all road users, and certain punishment following detection*

For some road users, mere evidence of enforcement activities is not enough to deter them from violating the rules. For this group, law enforcement has to pose a greater threat, for example by making it more unpredictable.

5. *Stronger enforcement (more punishment)*

Finally, we are left with a group of road users with a great interest in violating the rules, who can only be made to comply if stronger enforcement is present. Apparently, this group of road users will repeatedly test if the level of enforcement is really as high as they are made to believe or if they can predict when and where to expect actual enforcement activities.

6. *Changing the rule*

After widespread compliance with the law or rule has been realised, it may be considered whether the rule should be further specified or intensified so that additional safety effects can be realized. This last step only makes sense if the previous steps (threat of enforcement, actual enforcement, optimization of enforcement) have been successful. If there is still widespread non-compliance with the general rule, it does not seem worthwhile to further specify the rule.

Thus, a stepwise approach can be used and the effect of each measure can be evaluated before considering a new measure. Before a new rule or measure is introduced, the size of each of these groups should be known and

the extent to which the expected safety benefits of a rule or measure might be reduced due to the non-compliance of a small minority. The size of the different groups of road users can be estimated on the basis of a population survey.

After each measure, it should be seriously considered whether the next step is still necessary. For instance, it can be asked whether establishing and enforcing a rule is necessary when a large group of road users is already showing the desirable behaviour. Two reasons for taking the next step are:

- A relatively small group can still cause a disproportionately large road safety problem by not complying with/adhering to a rule or measure.
- There may be indications that without further intervention, the number of offenders will increase.

The level of enforcement needed may be difficult to calculate in advance. But it is clear that the level of enforcement depends on the steps that have already been taken to realise compliance with a traffic rule. Stepping up the level of enforcement is not likely to be effective as long as earlier steps have not been taken carefully. Increased enforcement will not be very effective if it has not been made unpredictable or if this fact is not well known to the public.

4. Pressing problems

4.1. Introduction

National road safety policy in the Netherlands aims for a sustainable safe traffic system typified by 'an infrastructure that is adapted to the limitations of human capacity through proper road design, vehicles fitted with ways to simplify the tasks of man and constructed to protect the vulnerable human being as effectively as possible, and a road user who is adequately educated, informed and, where necessary, controlled (SWOV, 1993, p. 4). Apart from the focus on the total road system, there are a number of specific spearheads for policy. In terms of disregard of road safety laws, five important spearheads for national policy are: drink-driving, seat-belt use, speeding, young moped riders and heavy traffic. For each of these spearheads, there are well-known problems associated with the acceptance of traffic laws. We will describe these problems and point out some solutions that often do not reach beyond the stage of proposals or incidental try-outs.

In the Netherlands, there is general consensus concerning the strategies to increase acceptance of drink-driving laws and seat-belt laws (§ 4.1. and § 4.2), but due to organisational problems, these strategies have not been realized on a large scale. There also seems to be some consensus about the idea that the intensive monitoring of individual driving speeds is the only feasible way to curb massive speed violations. However, the discussion about the best technological monitoring system has still to commence (§ 4.3.). There is as yet no clear strategy to increase acceptance of road safety rules among young moped riders (§ 4.4). There are some promising ideas about how to promote adherence to road safety laws among professional truck drivers (§ 4.5).

4.2. Drink-driving

In the Netherlands, the legal alcohol limit is set at 50 mg alcohol/100 ml blood. A reliable indicator of the overall incidence of drink-driving in the Netherlands is provided by roadside surveys of drivers' BACs. These data are obtained from police checkpoints at which drivers of all randomly stopped vehicles are breathalysed. In 1994, 6.1% percent of male drivers and 1.8% of female drivers had BACs over 50 mg/100 ml. The largest proportion of offenders was found among the group of male drivers aged between 35 and 50.

From a wider sociological perspective, drink-driving can be seen as a predictable outcome of our society's social institutions, especially transportation and recreation. Following that view, deterrence cannot represent the whole of drink-driving policy (Ross, 1992). However, stable deterrence is necessarily a backbone of any policy to influence drink-driving. The decline in the police enforcement of drinking-and-driving in the early 1990s, as a result of an ongoing reorganization process within the Dutch police departments, was associated with a simultaneous increase in drink-driving: 4.0% offenders in 1992, 4.2% in 1993 and 4.9% in 1994. Given the scarce resources available for maintaining effective deterrence, effort should be put into fine-tuning or optimizing the system. In the

Netherlands, this fine-tuning has led to some important improvements, starting in the 1980s (Noordzij, 1993). Since 1984, electronic breath testing equipment has been gradually introduced to replace chemical test tubes; at the same time, there was a gradual transition from selective to random breath testing. After 1987, the cumbersome blood testing technique was replaced by evidential breath testing. At the same time, there was a change in enforcement strategy from large static teams to smaller, mobile ones. Together with anti-alcohol campaigns and changes in consumer patterns (non-alcoholic beers), these improvements in enforcement strategy have contributed to the decline in drinking and driving between 1970 and 1991. In that period, the proportion of drivers with a BAC above the legal limit steadily decreased from 15% to under 4%.

The lessons from Dutch national research into drinking and driving have culminated in a clear strategy to deter drinking and driving. In a general sense, the strategy is intended to convey the message that all drivers, irrespective of age, sex, race or status, may be stopped by the police for a breath test. If stopped, the certainty is 100% that they will be tested for the use of alcohol. If the result of the test is positive, the certainty is 100% that they will be taken to the police station for further testing that will serve as legal evidence for prosecution. The point is to impress upon every driver that he cannot do very much to avoid controls, except to trust on luck; if he has drunk, a test by the police will inevitably lead to prosecution. Apart from the general objective, there are clear operational guidelines for street controls (Goldenbeld, 1995). In hours of known low alcohol consumption, the level of resources (including associated costs) allocated to alcohol enforcement activities - while not excessive (two-four testing officers) - is highly visible, thus creating general deterrence. In hours of known high alcohol consumption, when the percentage of drink drivers in traffic is greatest, the level of enforcement is increased (ten or more testing officers divided into smaller teams to increase exposure), the emphasis being on the detection and deterrence of drink drivers through both specific and general deterrence mechanisms. Thus, in the Netherlands the focus of increasing the acceptance of drink-driving laws has been on improving police enforcement procedures, rather than on strict punishment.

4.3. Seat belt use

In the Netherlands, the presence of seat belts in cars became a legal requirement in 1971. The law that made the wearing of seat belts compulsory was enacted on the first of June, 1975. Since April 1, 1992, the wearing of seat belts in the back is also mandatory. In the early 1990s, the use of seat belts stabilized, with percentages hovering around 79% outside built-up areas and around 65% inside built-up areas. A roadside survey conducted in the Netherlands in 1995 showed that 64% of drivers within built-up areas and 79% of drivers outside built-up areas used seat belts. These percentages fall far below the wearing rates in Germany or Great Britain, and also below the government target of an overall wearing rate of 90% in the year 2000.

The main reason people give for not wearing a seat belt - drivers as well as passengers - is 'forgetfulness'; evidently, the neglect of seat belt laws is not a 'strong motive' behaviour. Therefore, it can be expected that even modest

levels of enforcement may be sufficient reason for many drivers to buckle up again and get into the habit. Indeed, Dutch field experiments have shown that fairly stable long term effects on wearing rates can be achieved even through modest levels of police enforcement (e.g. Gundy, 1988).

The primary reason for the low wearing rates in the Netherlands is without doubt the neglect of some level of consistent enforcement of seat belt use. Police management and police personnel feel reluctant to enforce seat belt use.

The attitude often adopted by the police is that if road users are aware of the risks associated with not wearing their seat-belt and still decide not to 'buckle up', then they are only putting themselves at risk and are not affecting the safety of other road users.

Informal conversations with police officers suggest that this group does not have to be convinced of the potential safety and cost benefits of higher wearing rates. Police officers may easily confirm these arguments on a general level and yet persevere in their personal reluctance to pay any professional attention to seat belt use. The key to changing police motivation in this respect may be special educational programs for police officers that confront their biases in this area. An alternative solution may be found in the reward structure of the organization. For instance, it is known that the Australian traffic police divisions can be especially motivated to achieve successful enforcement of seat belt use (or other violations) because of 'performance pay', or because new funding or resources depend upon the success of a particular programme.

4.4. Speeding

Voluntary compliance with speed limits is a rare phenomenon. Drivers tend to regularly violate speed limits for one or more of several basic reasons: the pleasure of driving fast, the need to save time, conformity with other road users, or just unthinking habit. To increase compliance with speed limits, a system of frequent or continuous monitoring of speeding seems to be the only solution. There are three possible variants:

1. Automatization of enforcement with frequent speed camera controls along most motorways, rural roads and arterial roads within built-up areas.
2. Variable speed limiters.
3. In-car data recorders registering time and duration of speed violations.

All three solutions are based on the principle of frequent or continuous monitoring of speed, but they leave car drivers different degrees of freedom. In-car data recorders leave absolute behavioural freedom to the individual driver, yet create a strong sense of accountability to authority. Variable speed limiters restrict behavioural options and thus curtail individual freedom. According to a 1991 European survey among car drivers, which questioned over 17,000 drivers in 15 countries, nearly two out of every five drivers was in favour of a speed limit device that controls the maximum speed on motorways. If this measure were to be part of a European harmonization process, support would even be somewhat greater (Sartre, 1995).

Thus, the most promising measures for the near future involve some kind of continuous monitoring of individual driving behaviour. The problem is that these measures may not be popular. However, unpopular measures tend to

be better accepted after some time, especially when their beneficial effects become public knowledge.

4.5. Young moped riders

The moped was introduced in the Netherlands in the 1950s as a bicycle with a light auxiliary motor. However, soon the moped developed into a category of its own, emulating the model of a motorcycle, rather than that of a bike. In 1975, the wearing of a helmet was made compulsory for moped riders by act of law. In that same year, the concept of a bike with a light auxiliary motor was revived in the new legal vehicle category, the so-called 'snorfiets'. 'Snorfietsen' are low-powered two-wheelers with a legally permitted maximum speed of 25 km/h; riders do not have to wear a helmet. Since the early 1990s, the interest of young people for this vehicle has considerably increased, while the interest shown in the traditional moped has declined. This rise in interest has been ascribed to the dashing modern looks of these vehicles, the freedom to ride them without a helmet and the ease with which the engine power can be boosted.

Of all the traffic casualties treated in Dutch hospitals, about one sixth are involved in an accident on a moped or a 'snorfiets'. Most of these are male youngsters aged between 15 and 25. Manufacturers have made it relatively easy to boost the engine power of mopeds and 'snorfietsen'. Not surprisingly, the accident risk of 16-17 year-olds with a boosted moped-with-gears has been found to be four to five times higher than for the same age group with a standard moped. Of course, aside from physically boosting their vehicle, the age group of 16-17 year-olds favours risk-taking behaviour and tends to disregard road safety rules. Thus, the risk of being involved in a serious accident per distance travelled is twice to three times as high for 16-17 years-old as for the 18-50 year-old age group, irrespective of the type of moped used.

To increase compliance with road safety rules among these young moped riders, a theoretical certificate for mopeds will be required as of June 1st, 1996. The behavioural and safety effects of this educative measure have still to be evaluated.

4.6. Heavy traffic

Of all serious Dutch traffic casualties about 13% ensue from a crash with a heavy vehicle. A discussion of road safety involving heavy vehicles cannot forego a critical look at the transport industry.

In the Netherlands, many transport companies work in a commercial market where the margins for profit are small indeed. Due to harsh economic competition, some companies may tend to exert a lot of pressure on their drivers to neglect safety regulations in order to fulfil clients' orders.

The decrease in profit margins can be compensated for by companies in a number of ways:

- lowering quality, including safety standards;
- delaying the maintenance of equipment/machinery;
- reducing periodical check-ups on equipment;
- using inferior materials;

- investing less time and/or money in selection, education and guidance of drivers;
- using 'cheaper', less well-trained drivers, e.g. young, temporary drivers, drivers from foreign countries.

Thus, commercial forces may promote a company culture that sets short-term profit above long-term safety. The challenge is to persuade transport companies that they can take measures that both enhance the safety of their transport and are cost-effective. The Dutch Ministry of Transport is a strong proponent of a company-based intervention approach to improve truck drivers' compliance with road safety laws. According to this approach, the transport company with its different areas, e.g. management, planning and colleague drivers, constitutes the primary social environment that determines the driver's behaviour and acceptance of national and international safety regulations. Thus, the key to influencing the professional behaviour of truck drivers, including their compliance with national and international safety regulations, is the formal and informal policy of the company regarding matters of transport and safety.

A special group of advisers has been established whose main task is to advise companies on how to devise and implement a company safety policy that may lead to more safe and economic driving based on official company safety regulations. Basically, an active safety policy is based on a clear communication of the safety regulations and norms which a professional driver is expected to adhere to. For instance, the norms can be formalized in written form in a driver's guide book that he receives on joining the company. As part of this preventative approach, companies are urged to keep records on accidents and on the use and maintenance (and gasoline) costs of individual drivers, and to communicate with and give feed-back to drivers when these records prove unsatisfactory for some reason.

Studies have shown that keeping accident records and using these data to take disciplinary action against the drivers involved or instituting suitable educational action, is an effective safety practice (Moses & Savage, 1994). However, recent research suggests that heavy, one-sided reliance on sanctions to control the behaviour of drivers may be less cost-effective in the long run than a company policy that aims to involve actively the drivers in the goals and problems of the organisation and that encourages the driver to share in the responsibility of keeping up the performance and good name of the company (Lindeijer, 1995). In companies with such a 'people-oriented' policy, drivers are motivated to take pride in their profession and to take responsibility in improving their work and performance. However, such a policy can only work if the total culture of the company is based on mutual respect and good communication at all levels of the company.

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