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BESTPOINT
Criteria for BEST Practice Demerit POINT Systems

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Deliverable 2

**Identification of the essential features for an effective
Demerit Point System**

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Abstract

The BestPoint project aims to collect, analyse, summarize and disseminate recommendable practices for an effective and manageable Demerit Point System (DPS) as well as to identify potential further steps towards harmonisation at European level.

The current Deliverable is the second public Deliverable of the project and provides a description of the effectiveness and usefulness of various types of DPS and their specific features. Existing DPSs substantially vary in the organisation, the administration, types of violations included, the number of points related to these violations, and the means to regain the licence to drive.

The main aim of the work reported in the current Deliverable was to identify those features and elements that make a DPS as effective as possible. This Deliverable builds on the first BestPoint Deliverable that provided an extensive overview of the features of the current DPSs in Europe as well as the experiences and opinions of national experts about its usefulness and effectiveness¹.

¹ Klipp S. et al. (2011) European Demerit Point Systems: overview of their main features and expert opinions. Deliverable 1 of the BestPoint project. BAST, Cologne

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Country abbreviations

In the some of the Tables in this Deliverable country abbreviations are used:

AE:	Arab Emirates
AT:	Austria
AU:	Australia
BR:	Brazil
BU:	Bulgaria
CA:	Canada
CY:	Cyprus
CZ:	Czech Republic
DK:	Denmark
DE:	Germany
ES:	Spain
EL:	Greece
FI:	Finland
FR:	France
HU:	Hungary
IE:	Ireland
IT:	Italy
LV:	Latvia
LU:	Luxembourg
MT:	Malta
NL:	Netherlands
NO:	Norway
PL:	Poland
RO:	Romania
SL:	Slovenia
UK:	United Kingdom

Executive Summary

A Demerit Point System

Being part of the wider traffic law sanctioning system, a Demerit Point System (DPS) assigns penalty or demerit points to drivers or owners of vehicles when having committed a traffic offence. If within a certain period collected points exceed a specified limit, extra sanctions will be imposed in addition to the regular sanctions. The aim of DPS is to deter drivers and prevent them from (re-)offending in traffic (prevention). For those who repeatedly commit offences, a DPS will result in a (temporary) ban from driving (selection), often but not always in combination with compulsory or mandatory courses to rehabilitate those who are motivated to change their traffic behaviour (correction). At present 21 of the 27 EU Member States apply some sort of DPS or DPS-like approach. The exact design of the DPS and its organisation, e.g. the violations included, the number of points assigned, options for intermediate measures, consequences of exceeding the maximum number of points and ways to get rehabilitated, differ widely between countries.

Objectives and approach of BestPoint

The objective of the BestPoint project was to collect, analyse, and summarize current practices, opinions of experts, and scientific information to assess the usefulness of a DPS for road safety and to identify those elements, characteristics and approaches that have proven or are theoretically likely to result in the largest safety effect. Additionally, BestPoint aimed to disseminate the findings among the EU Member States and to assess the possibilities and limitations for harmonizing particular aspects of DPSs at the European level.

The project consisted of three steps. As a first step, the BestPoint project collected information on current point systems in Europe and their characteristics, and on opinions and considerations of national experts. As the second step of the project, the collected information was analysed with the aim of identifying those specific characteristics of a DPS that will bring about the best safety effect. This second step also included an international expert workshop to identify the possibilities for the exchange of information on offences and/or points between Member States. As a third and last step, the BestPoint project developed a handbook aimed at policy makers and practitioners in Member States and at EU level. The handbook summarises the results and conclusions and provides recommendable practice guidelines for setting up a DPS with a maximum return of effort.

This Deliverable: main questions

The current Deliverable reports on the result of the second step i.e. the analysis of the available scientific information and expert opinions and considerations with the aim to identify recommendable practices. For this, an analysis framework was developed that distinguished between design elements, support measures and outcomes. The main questions for this phase of the BestPoint project were formulated as follows:

1. What are the important design characteristics of a DPS that affect its functioning and outcomes? E.g. what offences have to be included for how many points and what target groups can or should be distinguished?
2. What support measures will optimize the actual functioning of a DPS? E.g. what levels and methods of enforcement are to be preferred; how can driver improvement and rehabilitation courses contribute; and what is the role of administration and monitoring?
3. What are the short and long term outcomes of a DPS in terms of safety benefits and which potential undesirable side effects have to be considered?

A fourth and somewhat other type of question is how useful and feasible it is to move in the direction of an EU-wide DPS and which successive steps can be taken in that direction.

The main data source for the current analysis was the information collected in the first part of BestPoint. This included qualitative and quantitative information about the general features of DPS programmes in Europe, and expert experiences and considerations about the working and effects of individual features. An additional source of knowledge consisted of scientific empirical studies and theoretical considerations. It must be noted that the sound scientific empirical information about the effects of a DPS is very limited. This is particularly true when looking at the importance or effect of specific, individual features of a DPS.

The overall safety effect

Some of the current DPSs have been evaluated in terms of their effect on safety, the ultimate goal of a DPS. Most studies show a substantial effect on casualties but only for a limited period of between 6 and 12 months. In this respect it is important to realize that it is very difficult to evaluate a DPS in a scientifically sound way. The effect of the point system as such can hardly be disentangled from the increased levels of enforcement and the intensive publicity campaigns that normally accompany the introduction of the DPS. The fact that initial effects of the DPS disappear after some time may be explained by the fact that the levels of enforcement and publicity could not be maintained.

Undesirable side effects

An undesirable side effect of a DPS is the fact that people may choose to continue driving while their licence is withdrawn. Unlicensed driving undermines the value of licence withdrawal in deterring traffic violations. In addition, unlicensed drivers have been found to be unsafe drivers as they are overrepresented in traffic crashes and violations. However, unlicensed driving is a problem of all licence withdrawal measures, not only those related to a DPS. Another undesirable side effect is the possibility of points trafficking, i.e. transferring points to another person, either or not for money. Point trafficking occurs especially in countries where the DPS includes automatically detected violations without identification of the driver. Data about the prevalence of points trafficking is missing.

Offences and points

It is assumed that a DPS can have a substantial effect on road safety and that undesirable side effects can be kept to a minimum if a DPS is designed and supported in the best possible way. With respect to the design it is important to consider the type of offences to be included and their weight in terms of number of points. The current study comes to the conclusion that a DPS should include all major moving risky traffic offences that are associated with increased crash risk or risk of serious injury and the number of points for an offence should be risk-dependent: the more risk involved, the more points. Thresholds for intermediate actions like driver improvement courses should be placed so that the DPS delivers a fast response upon repeated offences; it should take no more than two severe offences to send someone to a driver improvement course. Preferably, a DPS combines sanctions with some sort of reward, e.g. by remitting points after a period of offence-free behaviour. Based on psychological theory, it could be assumed that a system where offences result in a loss of bonus is likely to be somewhat more effective than a system where penalty points are added.

Target groups

Novice, generally young, drivers are a group that would seem to require specific treatment since they have an increased risk, and a more pronounced violation-risk relationship. Theoretically, more points for (some) offences or lower thresholds for intermediate measures should result in a faster response of DPS towards novice drivers and earlier prevention - and hence more safety. However, the evidence regarding effectiveness of such treatment is mixed. Experiences with DPS for novice drivers in France, Netherlands and UK have been disappointing whereas Germany, Austria and Finland have experienced some success. Specific driver improvement or rehabilitation courses allow for better focusing on the characteristics of this group.

On theoretical grounds, there is not much reason to exclude offences by pedestrians, cyclists or other non-motorised road users from a DPS. However, if they do not have a driver licence, the administrative and organisational burden may outweigh the advantages. With regard to professional drivers, it is concluded that they should be included in the DPS, given their high responsibility for passengers, goods and third parties. Since licence suspension can be a particularly far-reaching intervention for professional drivers, alternative effective sanctions for specific groups of professional drivers can be considered.

Enforcement

It is obvious that unless enforcement and related publicity is on a certain level and offences are actually detected, DPS cannot be expected to substantially increase road safety in the long run. Based on current knowledge, it is not possible to specify in quantitative terms how much enforcement is needed for an efficient DPS. Automatic speed enforcement and random breath testing however, should have a major role because these methods have a high capacity of detecting offences. In addition, regular variation in the level of enforcement and publicity has been found to increase people's awareness of these measures and, hence, their effect. The introduction of automatic enforcement necessitates decisions about drivers vs. owner liability. First, preferably, automatic enforcement should enable to identify offenders and to allocate points to identified drivers. Second, if identification of offenders by automatic enforcement is not possible, automatic enforcement should be supported by introduction of mandatory identification of the driver. If the owner is not willing to identify the driver, then the points should go to the owner. Finally, additional measures are needed to counter unlicensed driving and points trafficking.

Intermediate and rehabilitation measures

When a driver has collected a particular number of points first a number of intermediate measures, i.e. measures before the licence is withdrawn, are set in action. It is recommended to, as a first step, send out a warning letter and as the second step have the driver participate in a driver improvement course. A pre-condition for the second step is that only those driver improvement courses are used which have a proven effect on re-offending among specific groups of offenders. When the maximum threshold is reached, licence withdrawal will follow and, subsequently, several rehabilitation measures, such as a rehabilitation course, to get the licence back. Warning letters are generally found to be effective. The evidence for the effect of driver improvement and rehabilitation courses is less conclusive; some do and others do not have an effect on re-offending. This is most likely related to aspects like didactical method, type and number of participants, the quality of the teachers, as well as the main topic. In particular drink driving courses have been found to be effective. Overall, tailor-made course with participants with similar problems and similar features are to be preferred and mandatory courses seem to be more effective than voluntary intermediate measures.

Since the effectiveness of driver improvement and rehabilitation courses measures is not conclusive, alternative measures can be considered, for example, in-vehicle technology that prevents drinking and driving (alcohol lock) or speed limit violations (Intelligent Speed Adaptation - ISA), or in-vehicle technology that monitors various driving behaviours and provides targeted feedback (black boxes). It could be considered, for example, to offer the repeat offender, based on the type of offences, an alcohol lock, an ISA or a black box instead of licence withdrawal.

Administration and monitoring

The administrative procedures should be as simple as possible, transparent and swift. One single central register is needed that contains all information about each individual offender and that is the basis for calculating the points and taking actions. This central register is also the basis for informing the offender about his or her point status. For reasons of transparency and swiftness, it is important that this information is easy accessible and up-to-date. Information can be provided through, for example, the internet or automatically produced information letters. Regular statistics, at least on an annual base, fulfil the need to monitor the DPS and should be a basis for overall publicity about the system. The statistics should be also made available for scientific monitoring and research of effectiveness of the DPS and specific types of measures within the system.

Towards a cross-border information exchange and a EU-wide DPS

Offences committed by foreign drivers are a major concern, especially in transit countries such as France, Germany and Luxembourg. Non-resident drivers who commit offences may feel that this does not affect their DPS status at home. Several countries already have multi- or bi-lateral agreements to exchange information on offences, and international policing organizations stress the need for a further European-wide approach in order to facilitate DPS enforcement of traffic offenders who cross borders. Obviously, this cannot be realised overnight. Therefore, based on opinions and considerations of a number of experts from different national and European road safety-related organizations, a gradual five step approach was proposed towards a full EU-wide DPS.

1. Exchange of information about (certain) offences between Member States.
2. Recommendation of the European Commission to Member States to adopt a DPS following the recommended practices as identified in the BestPoint project.
3. Creation of virtual national driving licences for non-resident offenders, caught for the first time.
4. A mandatory DPS in all Member States for a limited number of offences and a conversion table to allow exchange of nationally defined points.
5. One single and binding DPS at EU level for all Member States.

At this stage it is not possible to give an estimate of the required time, but especially the last step is to be considered as a long-term scenario.

1 Introduction

Being part of the wider traffic law sanctioning system, a demerit point system (DPS) assigns penalty or demerit points to drivers or owners of vehicles when having committed a traffic offence. If within a certain period collected points exceed a specified limit, extra measures, especially extra sanctions, will be imposed in addition to the regular sanctions. The aim of DPS is to deter drivers and prevent them from (re-)offending in traffic. For those who repeatedly commit offences, a DPS will use the threat of a temporary ban from driving and possibly offer mandatory or voluntary driver improvement courses to help offenders to regain points and improve their driving behaviour. For those who have nevertheless lost their driving licence, there can be further rehabilitation courses that help to solve behavioural problems and to regain the licence.

At present 21 of the 27 EU Member States apply some sort of DPS or DPS-like approach. Outside Europe, a DPS is applied in, for example, Australia, USA, and Canada. The exact set-up of the DPS and its organisation, e.g. the violations included, the number of points assigned, options for intermediate measures, consequences of exceeding the maximum number of points and ways to get rehabilitated, differ widely between countries.

The objective of the BestPoint project was to collect, analyse, and summarize current practices, opinions of experts, and scientific information to assess the usefulness of a DPS for road safety and to identify those elements, characteristics and approaches that have proven or are theoretically likely to result in the largest effect. Additionally, BestPoint aimed to disseminate the findings among the EU Member States and to assess the possibilities and limitations for harmonizing particular aspects of DPSs at the European level.

As a first step, information was collected on current point systems in Europe, their characteristics, and their safety and other effects. An overview of the findings can be found in Deliverable 1².

As the second step of the project, the collected information was analysed with the aim of identifying those specific characteristics of a DPS that will bring about the best possible effect. The results and conclusions of this analysis constitute a major part of the current report, Deliverable 2. This Deliverable also reports on an international expert workshop that took place to discuss the possibilities for the exchange of information on offences and/or points between Member States.

As a third and last step, the BestPoint project developed a handbook (Deliverable 3) aimed at policy makers and practitioners in Member States and at EU level summarizing the results and conclusions and providing recommendable practice guidelines for setting up a DPS with a maximum return of effort.

As indicated, the current Deliverable presents the results of the analysis of current DPS practices, scientific information and expert considerations. Chapter 2 provides the overall conceptual framework of the analysis by placing the DPS approach in the traffic law enforcement chain (Section 2.1), specifying the relevant components of a DPS and their interrelationships (Section 2.2), describing the guiding research questions for the analyses (Section 2.3) and explaining the data sources and methods per research question (Section 2.4).

² Klipp S. et al. (2011) European Demerit Point Systems: overview of their main features and expert opinions. Deliverable 1 of the BestPoint project. Bergisch Gladbach, Bundesanstalt für Strassenwesen BASt.

Chapters 3 to 9 report on the analysis of the seven components of DPSs, as identified in Section 2.1, namely:

- Offences and related points that can be included in a DPS
- Specific target groups that can be distinguished
- The use and need of intermediate measures such as driver improvement courses
- The use and need of enforcement
- The use and need of administration and monitoring procedures
- The overall safety effects that can be expected
- Other effects, such as on public acceptance or possible undesirable side-effects

Chapter 10 provides a summary of the workshop on possibilities and limitations of harmonization of DPS and the exchange of information.

Finally, Chapter 11 summarizes the findings, presents conclusions and gives consideration to what elements of DPS can be considered as 'recommendable practice' elements when designing or redesigning a DPS.

2 Conceptual framework of the DPS analysis

By: Charles Goldenbeld & Willem Vlakveld, SWOV Institute for Road Safety Research, Netherlands

2.1 The place of a DPS in the legal traffic system

The introduction of a DPS generally does not start from scratch. The 'building blocks' for the legal design of a DPS can be found in existing traffic rules, procedures, institutions and sanctions. Most EU countries had already regulations and sanctions for recidivist offenders before the introduction of a point system. Consequently, a DPS is typically anchored in a mix of criminal and administrative law. Based on Goldenbeld et al. (2000), *Table 2.1* presents a comparison of these two types of legal systems for dealing with traffic offenders.

Table 2.1 *Comparison of criminal and administrative legal systems for traffic offenders (largely based on Goldenbeld et al., 2000)*

	<u>Criminal law system</u>	<u>Administrative law system</u>
Traffic behaviour :	Focus on infrequent behaviours	Focus on frequent behaviours
Detection of traffic violations:	Evidence weighed by court	Evidence only by exception weighed by court
Prosecution of traffic violations:	Individualised procedure handled by courts	Standardised administrative procedure
Sanctioning offenders	<ul style="list-style-type: none">- Individual (severe) punishment.- After repeat offences of same type the sanction severity typically increases.- Different types of sanctions (say alcohol and speed) do not automatically add up to influence sanction severity.	<ul style="list-style-type: none">- Standardised (light) punishment.- In general repeat offences do not influence sanction severity.- Different types of sanctions (say alcohol and speed) do not automatically add up to influence sanction severity.

The criminal law system usually focuses on infrequent behaviours and follows three separate stages: detection, prosecution and sanctions. In criminal law, usually a large range of penalties can be imposed, from the loss or restriction of liberty (imprisonment) or rights (driving licence withdrawal), to financial penalties (day-fine, fine-unit, fines based on the offender's financial status) or alternative solutions such as community work (day-unit). Legal procedures are in place to control the validity of the detection and prosecution stages.

Under the criminal law regime, a (repeat) offender would have to appear before a court where a judge weighs the seriousness of the offence and possible mitigating circumstances before passing a sentence. After sentencing a convicted traffic offender might have some further possibilities of appeal.

Although criminal law is still applied for particular traffic offences, in most EU countries the process of handling traffic offences has undergone a shift towards administrative procedures in order to unburden the administrative workload on the judicial process. Both in countries with and without a DPS, the legal procedures for fining traffic offenders have been streamlined so that the government is capable of fining large numbers of traffic offenders against low costs. The catalyst for this development towards administrative procedures was

the introduction of automated enforcement by speed cameras and red light cameras in the 1970's.

In the administrative law systems typically the three sanction stages are combined into a single one; there is no prosecution, minimal or no judgement and the violation is directly sanctioned. Administrative sanctions do not include prison sentences but can apply the loss or restriction of rights (driving licence), but it mostly uses a financial penalty with fixed or unfixed amounts.

A DPS can fall under a criminal law system, an administrative law system or a mix of both systems. With the introduction of a DPS typically the following new elements are added to the existing legal sanctioning system:

- Penalty points for different types of offences *automatically add up* to result in extra measures, most frequently extra sanctions, if collected points exceed a limit within a specified time frame, a characteristic that is unique to DPS.
- Very often, a DPS *extends the scope of violations* that may be defined or count as repeat offending compared to the reference situation.
- Very often, a DPS process of allocating penalties is *streamlined* in a way that it minimises the burden for courts, whether within a criminal or an administrative law frame.

2.2 Overall analysis framework

The subsequent chapters of this Deliverable analyse the collected information of the existing DPSs with the aim to identify the most important elements and features. For this, an analysis framework was developed. This framework is presented in *Figure 2.1*. The framework consists of three central processes (square black boxes) and an intermediate process (the black circle), surrounded by several contextual factors (grey boxes) that can influence the central processes. The central processes of a DPS start off with the various legal *design features* which are *supported* by the combined machinery of administration, enforcement, implementation of sanctions, and communication. Through the theoretical intermediate *effect mechanisms* of prevention, correction, and selection, a DPS will generate specific *outcomes*: in principle the intended safety outcomes, but sometimes also unintended non-safety outcomes, e.g. road users trying to avoid the negative consequences of DPS by other ways than changing their offending behaviour. Each of these central elements acts as a condition or precursor for the next one.

The contextual factors first of all include both the *legal reference situation* (e.g. existing laws, procedures, sanctions) and the *aspired legal and administrative situation*, both influencing the legal design of the DPS. The overall *safety level* in a country and other safety measures can also be considered as contextual factors. If, for example, the initial reference safety situation is bad, e.g. indicated by low levels of enforcement, low levels of seat belt wearing, high levels of speeding and drink-driving, the introduction of a DPS with intensified enforcement may lead to substantial safety gains, at least in the short term. On the other hand, if the reference safety situation is relatively favourable with high levels of enforcement, and low levels of offending, the introduction of a DPS is likely to achieve far more modest safety gains. *Road safety measures* that are taken simultaneously, such as the introduction of both DPS legislation and intensified enforcement levels, also affect the outcome and make it more difficult to analyse which of both factors has been the most influential. Finally, contextual *social or economic trends* may either support or counteract the effects of the DPS, also making it difficult to correctly assess the effects of the DPS.

The feedback loop at the bottom of the figure indicates that a DPS is assumed not to be fixed for all time, but that revisions to DPS are possible and actually made according to feedback how the system functions.

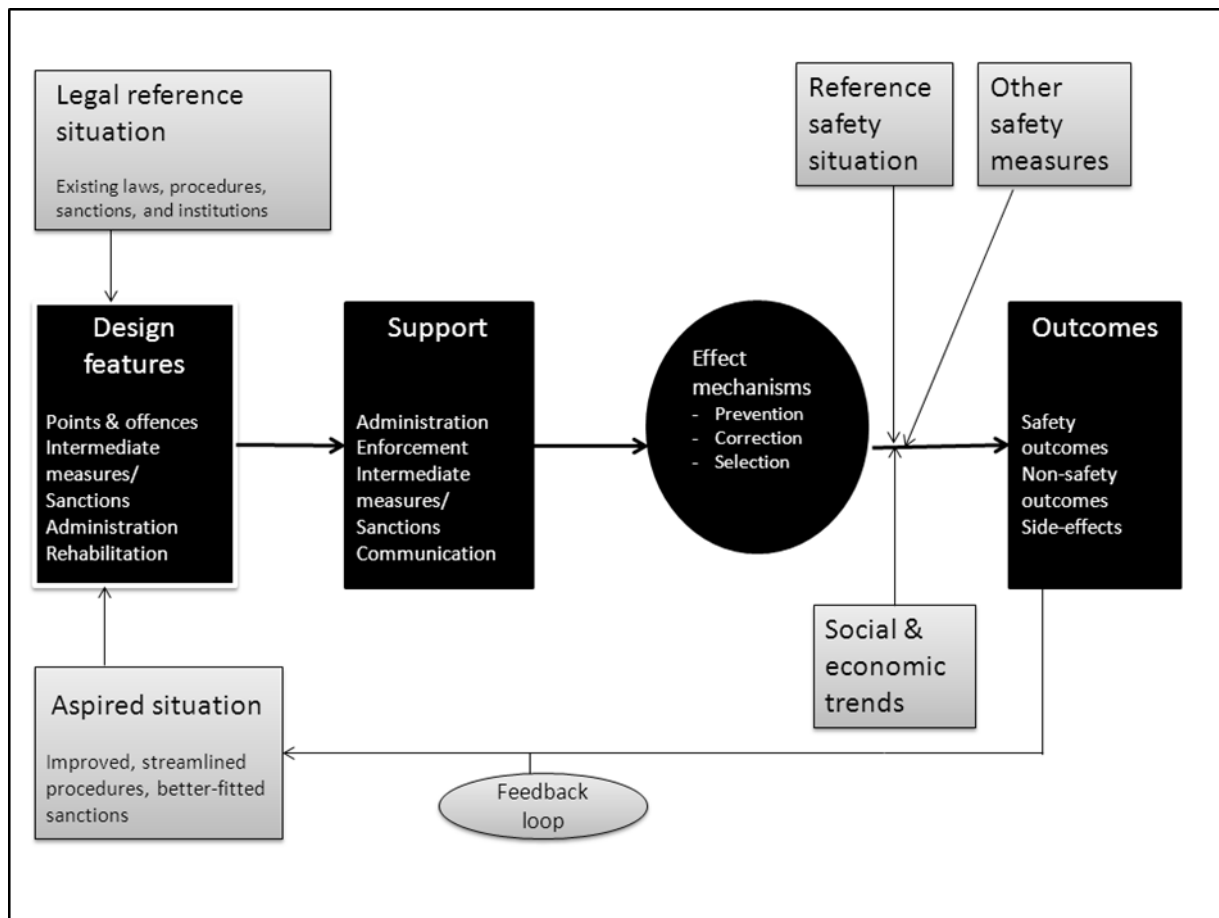


Figure 2.1 *The DPS analysis framework: design, support, and outcomes of DPS (black boxes), the intermediate processes (black circle) and the contextual (grey boxes).*

The subsequent Chapters focus on various elements of each of the three central processes: design, support and outcome. Here we briefly elaborate on the intermediate process of the DPS, i.e. the theoretical mechanisms of prevention, correction and selection.

The *preventive effect* of a DPS refers to the aim that the threat of accumulating points and losing a licence restrain drivers from violating the rules. The preventive effect can be 'general' and 'special'. The general preventive effect is the effect that drivers in general will be motivated to follow the rules in order to avoid getting a point. This effect is independent of whether or not these drivers have already collected points. The special preventive effect is the motivational effect on drivers who have already collected points and thereby may be motivated even more strongly to avoid getting more points by driving more rule obedient.

The second theoretical mechanism of a DPS is the *corrective effect*. This effect occurs if drivers can reduce the number of points or avoid other measures by following a driver improvement course. In this case an educational, corrective element is intertwined with the preventive effect.

The third and last theoretical mechanism of a DPS is *selection*. The selective effect occurs if a DPS is able to remove dangerous offenders from (motorised) traffic before they actually cause a crash, or before they cause *another* crash. In principle, this will benefit road safety.

2.3 Research questions

The study reported in this Deliverable aimed to contribute to the general objective of the BestPoint project by analysing the available scientific information as well as expert opinions and considerations to assess the usefulness of a DPS for road safety and to identify those elements, characteristics and approaches that have been proven or are theoretically likely to result in the largest effect. More specifically, the main research questions were:

1. What are the important design characteristics of a DPS that affect its functioning and outcomes?
 - a. What offences should be included for how many points?
 - b. What target groups can or should be distinguished?
2. What support measures will optimize the actual functioning of a DPS?
 - a. How do levels and methods of enforcement assist in its effectiveness and efficiency?
 - b. How can driver improvement and rehabilitation courses optimize its effectiveness and efficiency?
 - c. How should or can administration and monitoring be improved?
3. What are the short and long term outcomes (costs and benefits) of a DPS?
 - a. What are the expected safety benefits?
 - b. Which potential undesirable side effects have to be considered?

For each of these questions on design, support systems and outcomes, an additional aim was to assess whether the identified desirable characteristics of a DPS point systems are likely to be sustainable and transferable. Chapters 3 through 9 successively discuss the analysis results for each of the seven sub-questions. Chapter 10 looks at the legal possibilities to have a harmonized EU DPS. Based on the analyses in these Chapters, concluding Chapter 11 takes a final look of what has been learned about DPS-systems and what conclusions can be formulated concerning recommendable practices.

2.4 Data sources and analysis approach

As indicated in the introduction, the basic information for the current analysis was collected in the first part of BestPoint based on scientific literature, questionnaires and interviews (see Deliverable 1 by Klipp et al., 2011 for detailed information). This concerns qualitative and quantitative information about the general features of DPS programmes in Europe, and expert experiences and considerations about the working and effects of individual features. This information and, in addition, results from scientific studies and theoretical considerations was used to answer the above research questions.

The available information differs per research question. Preferably, the conclusions were to be based on the results of sound empirical scientific studies. This was only possible to a very limited extent. For example, overall DPS safety effects have been studied by several scientific studies. Some empirical information is also available regarding the effects of intermediate measures, especially driver improvement and rehabilitation courses for traffic offenders. However, not all studies have sufficiently taken account of potential confounding factors such as the effects of concurrent measures or the general trend over time. For several other research questions there is much less or no scientific information available. For example, for the questions concerning the most optimal relationship between offences and

point allocation (1a), the best type of monitoring of the system (2c), the non-safety outcomes of points systems (3b) have not yet been the subject of repeated and systematic research investigation. Indeed, these research questions are difficult to tie down in a sound operational comparative research design.

Lacking systematic scientific studies on these subjects, we will consider and answer these research questions by looking at general theoretical arguments and considerations, and expert opinions. Consequently, the answers to these questions will be tentative, not yet proven or tested by systematic evidence. *Table 2.2* summarises research questions, data sources and method per research question.

Table 2.2 Overview of BestPoint data sources and approach per research question

General research question	Sub-questions (Chapter)	Data sources and approach	Described in:
What are important design characteristics of point systems that may affect functioning and outcomes?	<i>Relationships between points and offences</i>	Mainly qualitative analysis and review of main dimensions in existing DPSs supplemented by expert opinions.	Chapter 3
	<i>Target groups</i>	Mainly qualitative analysis and review of expert opinions and arguments, supplemented by a few studies.	Chapter 4
What support measures optimize the actual functioning of point systems?	<i>Enforcement levels and methods</i>	Review of scientific studies concerning levels and methods of enforcement within the context of DPS countries.	Chapter 5
	<i>Intermediate measures</i>	Review of scientific studies on effects of intermediate measures	Chapter 6
	<i>Administration and monitoring</i>	Qualitative, theoretically oriented analysis and review partly based on expert opinion and arguments.	Chapter 7
What can be said about short and long term costs and benefits of point systems?	<i>Safety outcomes</i>	Review of scientific studies, distinguishing long term and short term.	Chapter 8
	<i>Non-safety outcomes</i>	Mainly qualitative analyses and review of expert opinions, supplemented with some general statistics.	Chapter 9
Synthesis of findings and conclusions	<i>Recommendable practices</i>	Synthesis of studies, data, and arguments	Chapter 11

2.5 References

Goldenbeld, Ch., Heidstra, J., Christ, R., Mäkinen, T & Hakkert, S. (2000). *Legal and administrative measures to support police enforcement of traffic rules*. Deliverable 5. ESCAPE project. Project funded by the European Commission under the Transport RTD Programme of the 4th Framework Programme. VTT, Espoo.

Klipp et al. (2011) European Demerit Point Systems: Overview of their main features and expert opinions. BestPoint Deliverable 1. Project No. MOVE/SUB/2010/D3/300-1/S12.569987-BestPoint. BAST, Bergisch Gladbach

3 Design of DPS: offences and points

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3.1 General Introduction

As outlined in the previous Chapter, a Demerit Point System (DPS) has a preventive, corrective and selective function. It was also explained that the preventive effect shall be both general (addressing all target groups) and special (addressing offenders). When looking at the offences and points to be included in a DPS, these very basic functions have to be considered. More specifically, the relevant elements to be considered are:

1. Offences to be included and number of points per offence
2. Multiple simultaneous offences
3. Adding or subtracting points
4. Thresholds for intermediate measures
5. Mechanisms for remission of points

The next sections elaborate on each of these elements in a theoretical way and give an overview of current practices in the DPS countries. Evidence and facts are presented as well as expert opinions and considerations, specific case evidence and issues that are relevant for the sustainability of the findings.

3.2 Similarities and differences between countries

3.2.1 Offences and points

Since the aim of a DPS is to improve safety, it seems reasonable to include those offences that have a straightforward relationship with accidents or accident severity. However, reliable information about crash causation is limited. In addition, some offences may be related to many, but low severity accidents, like minor speeding offences or short time headway. Other offences may be low in number, but extreme in consequences, like wrong way driving on motorways. The severity of offences can also be weighed by looking at the potential risk for others. In that view, for example, seat belt use and helmet use could be considered as only protecting oneself, not exerting risk to other people. Again, this is not straightforward either, since unbelted rear seat passenger could injure a person sitting in front of them in case of a frontal crash. It is also incorrect from a financial, macroeconomic point of view, since all citizens of a country in one way or another have to pay for accident costs including those of car drivers without a seat belt and motor riders without a helmet.

When it comes to relating a number of points to an offence, there is a choice between scales simply counting offences (all offences counted as equally severe) and scales considering different severity of offences. In the latter case, there is the choice of how much differentiation there is in point's assignment. A scale with a high number of points will facilitate fine-tuning between offences, their severity and consequences. Severity can also be considered by applying different lifetimes of points.

In four countries (Austria, Denmark, Finland and the Netherlands) the DPS does not differentiate between offences with different levels of severity. Severity is only considered implicitly by either or not including the offence in the DPS.

For the remaining 17 countries, there is some variability of points with a different approach of flexibility. Eight countries are strict in pointing (e.g. besides a likely heavy sanction such as jail time, France assigns six points in case of homicide in traffic); seven countries have flexible values (e.g. Malta has a range of three to eleven points for "Causing death by dangerous driving"). In both cases, there may be another degree of freedom by defining two offences of the same kind, but with a different level of severity. This is done in most of the countries for different levels of BAC and speeding; E.g. in the Cyprus, someone speeding 25 to 50% over the limit receives two to four points, but three to six points for more than 50% over the limit.

Table 3.1 presents an overview of offences, the number of countries that list that offence in their DPS and the importance of the offence in terms of related points. This analysis is based on 20 DPS countries, excluding Slovenia.

Numbers of points given to specific offences are not comparable between countries. The number of points awarded to a single offence has to be considered in relation to the taxonomy of the respective system. Hence, the number of points for an offence is replaced by the share taken from the total (e.g. speeding in Malta is 3 to 6 point and disqualification is at 12 points, meaning that a speed violations takes up 25 (lowest) to 50% (highest) of the total; Ireland awards 4 points to all speeding offences and has disqualification at 12, meaning that both the lowest and highest value are 33%). The Table below lists the averages of these lower and upper values applied in the 20 countries. To have a broader picture about how severe various offences are considered, the table also displays the lowest lower value of all countries (e.g. 2 points minimum for speeding in Bulgaria, disqualification at 39 points, means 5%) and the highest upper level (e.g. speeding 20 km/h over the limit in urban areas and 30 km/h over the limit in rural areas in the Czech Republic result in 7 points, which is 58% of the disqualification level). Hence, the difference between "lowest pointing" and "highest pointing" provide information on diversity of valuation. The bandwidth between "average of minimum" and "average of highest" may be considered as an indication of European common understanding of severity of an offence. In the last column, a *Pointing Index* is displayed, i.e. the product of the share of countries having that offence in their DPS and the number of points awarded on an average, adjusted to a maximum of 100%. Appendix 3.I at the end of this Chapter provides a brief description of each of the offences listed in this Table.

Table 3.1 *Pointing characteristics by offence category in 20 DPS countries*

Offence	Number of Countries	Lowest pointing	Average of minimum	Highest pointing	Average of highest	Average points	Pointing index
Post-accident misbehaviour	16	15%	38%	83%	48%	43%	100%
Speeding	20	5%	25%	58%	34%	30%	86%
Dangerous behaviour	13	12%	31%	92%	52%	42%	79%
Alcohol	11	17%	37%	92%	57%	47%	76%
Red light running	17	5%	26%	50%	29%	28%	68%
Priority rules	17	6%	26%	58%	27%	27%	66%
Causing accident	11	8%	29%	92%	53%	41%	65%
Driving license offences	12	10%	30%	50%	36%	33%	57%
Vehicle license offences	10	6%	37%	67%	41%	39%	57%
Pedestrian crossing	11	13%	34%	58%	34%	34%	54%
Trajectory violation	15	6%	23%	58%	25%	24%	52%
Technical condition	12	13%	29%	58%	30%	30%	52%
Overtaking	14	5%	24%	42%	27%	25%	52%
Alcohol/drugs	9	17%	33%	92%	41%	37%	48%
Cell phone	12	12%	24%	58%	31%	27%	48%
Other	11	6%	24%	92%	28%	26%	42%
Railway crossing	10	10%	30%	42%	31%	31%	45%
Time headway	11	6%	25%	33%	27%	26%	41%
Seat belt	13	4%	19%	50%	24%	22%	41%
Wrong way driving	9	6%	29%	50%	30%	30%	39%
Drugs	5	17%	41%	92%	60%	51%	37%
Parking	7	8%	23%	42%	23%	23%	23%
Cargo securing	8	5%	20%	50%	20%	20%	23%
Child restraint	6	8%	24%	33%	24%	24%	21%
Helmet wearing	8	8%	15%	33%	20%	17%	20%
Vehicle lights	7	6%	19%	33%	19%	19%	19%
Formal	4	5%	29%	50%	29%	29%	17%
Endangering passengers	5	6%	22%	33%	23%	23%	16%
Driving hours	2	33%	46%	58%	46%	46%	13%

It may be assumed that a severe offence is included in many DPSs and is awarded many points. Offences of low severity might not be considered by a number of countries and be awarded a low number of points in other countries. Both number of countries and number of points could, hence, be considered as a scale of severity. The table shows that valuation in both scales is quite consistent throughout the 20 countries. The colour patterns in the table are similar with two exceptions: "Drugs" is a methodological problem because 8 countries have drug and alcohol offences treated in one. Practically, 12 countries include drug offences. "Driving hours" is an outlier included in only two DPSs.

3.2.2 *Multiple simultaneous offences*

A typical example of a simultaneous multiple offence may be causing an accident by speeding under the influence of alcohol. In principle, there are two alternatives: either assign the points of each of the individual offences or consider only one of the offences, normally the most severe one. But what if one of the offences committed in coincidence is punished separately, e.g. by licence withdrawal or even by imprisonment? There may be numerous complicated constellations. The challenge might be more in covering all possible cases instead of providing a reasonable solution to each of the cases.

Across the Member States, three typical patterns can be distinguished: Six countries (AT, CZ, DE, IE, LV, UK) only include the most severe offence. Five countries add up points for all

offences (CY, DK, EL, PL, RO), where in Poland it is difficult to lose all points at one time, i.e. that multiple offences hardly ever lead to disqualification if the offender has not collected points before. Five countries (FR, HU, IT, LU, ES) add up points, but consider them only with a common maximum. In these countries, either fixed amounts or percentages are added to the most severe offence or a maximum value for multiple offences is determined. Hungary and Luxembourg vary maximum values according to severity of offences. In these five countries, multiple offences may be added up to a maximum of 67% to 75% of the disqualification level.

3.2.3 Adding or subtracting points

Points can be added up to a maximum or subtracted from an initial bonus. For example, if as is the case in Austria, Denmark and the Netherlands, the licence is withdrawn after three offences within a certain period, and it does not matter whether they are counted up or down. In general, it can be stated that the design of a DPS should follow the institutionalised, cultural patterns of a country, if we require the system to be easily understandable (Benedict, 1934; Kröber & Kluckhohn, 1952). Such patterns strongly differ between countries, e.g. school marks range from 1 to 5 in Austria and Germany, from 6 to 1 in Switzerland, from 20 to 0 in France, 10 to 0 (including two digits behind the comma) in Romania, from A to F in the USA (all from best to worst).

In most of countries' DPSs, drivers currently start off from a point account of zero and points are added for an offence; only five countries have a system where drivers begin with a set of bonus points and points are subtracted: Bulgaria, France, Italy, Luxembourg and Spain.

3.2.4 Thresholds for intermediate measures

The current DPSs in the EU apply different thresholds for different actions. The *maximum threshold*, i.e. the threshold for licence withdrawal, ranges from 3 to 39. This refers to the regular threshold and does not consider adjusted thresholds for specific groups such as novice drivers (see Chapter 4). The lowest threshold of 3 points is found in the four countries that only count offences: Austria, Denmark, Finland and the Netherlands. In these countries, the 3 "points" equal three offences. The highest threshold (39) is found in Bulgaria. Furthermore, there are eight countries that have a maximum of twelve points. The remaining eight countries have a maximum between 15 and 25. Independent of the number of points, but focusing on repeat offences, 11 of the DPS countries would disqualify drivers after two of their most severe offences; in eight countries it would take three offences. Only for Greek drivers it takes at least four offences to be disqualified by the DPS. In addition, though unrelated to DPS, in all countries certain severe offences result in immediate disqualification.

Looking at the *thresholds for intermediate measures* such as warning letters and driver improvement courses (see Chapter 6), there are almost no similarities between countries. Although detailed information is missing, it is clear that in 11 countries participating in driver improvement courses results in remission of points. In other countries it does not affect the point account, but may prevent licence withdrawal. For example, in Austria, a driver has to follow a course after the second offence (i.e. at a point level of 67%). If the course is not attended, the licence is withdrawn.

3.2.5 Mechanisms for remission of points

There are various models of how demerit points can be deleted from a road user's record, such as

1. Points/offences outdate after a period equal for all offences.
2. Points/offences outdate after a period considering the severity of the offence.
3. The lifetime of previous points/offences increases if another offence is committed.
4. Points/offences may be adjusted by intermediate measures.

Seven countries apply a fixed lifetime of points (between one and five years). In eight countries, the lifetime of points is extended if other offences are committed. In five countries the lifetime of points varies by severity of offences.

If severe offences receive many points and, in addition, points have a longer lifetime, severity is double-counted. A system would probably be easier understandable if all points had the same lifetime, and new offences did not suppress remission of points for previous ones.

Remarkably, not a single EU Member State applies a system of periodic remission of points even though this may be more transparent. In such a system, each year a predefined number of points would be subtracted (or added) if no new offences were registered. This way, severe offences with many points would survive for a longer period, points would add up according to the frequency of offences, no particular rules were needed on lifetime of points for different offences nor were complicated rules on multiple offences. Even the period of disqualification could be linked to the number of points. First discount of accumulated points could be given after a short period of good behaviour, which may support the effect of the system.

3.3 Facts and evidence

There is no scientific evidence to support safety-based decisions about the offences to include in a DPS and the design a system for point allocation. Most evaluation studies look at the effects of one particular DPS; we are not aware of studies that would allow for an analysis of the effect of single parameters like offences to include, total number of points or the question of counting up or down.

Available evidence is only indicative. For example, in Ireland, a significant change of hospitalised ocular injuries occurred after implementation of a DPS and this change was attributed to inclusion of seatbelt wearing in the Irish DPS (Saeed et al., 2010). On the other hand, in Austria, the seat belt wearing rates considerably increased after implementation of the DPS, even though seat belt wearing is not included in the offence list³. Another interesting indication comes from a study in California: The risk of a fatal accident in the month of a conviction was 35 % lower than in a comparable month with no conviction for the same driver (Redelmeier et al., 2003). The effect was greater with speeding violations with penalty points than without. Broughton (2008) found less speeding offences committed by drivers approaching the disqualification level by having committed speeding offences before. He could not detect the reason for this effect. This is an indication that a DPS that includes speeding offences has an effect on the prevalence of speeding

After having analysed experiences with DPS on an international basis, Vaa (1998) recommends that point systems should be simple and understandable, that the list of convictions should be short; that the offences included in the DPS should relate to serious road safety risk; and that parking offences should not be included in a DPS.

³ According to periodic surveys (twice a year) carried out by KfV

An evaluation study of the French DPS (Aribaud, 2006) developed a number of practical recommendations regarding how to organize DPS. Based on that and with respect to offences and related points to be included, it can be recommended:

1. To give all drivers who have collected a particular number of points the opportunity to participate in a driver improvement course in exchange for points remission.
2. To only include offences in the DPS that cause danger for oneself or for somebody else.

A psychological decision making theory, the prospect theory (Kahneman & Tversky, 1979), is relevant for the question whether points should be added or subtracted. In the prospect theory, the principle of *loss aversion* refers to the fact that people tend to strongly prefer avoiding losses to acquiring gains. Some studies suggest that losses are twice as powerful, psychologically, as gains. According to the principle of loss aversion, a point system that subtracts points from a fixed number may motivate offenders more strongly than a system that allocates points starting from zero. Nevertheless, this detail seems to be of lesser importance for the well-working of a DPS, as long as its basic functioning and the counting mechanisms are clearly explained and communicated.

3.4 Considerations and Opinions

In the first part of the BestPoint project, experts from EU Member States were asked to give their consideration and opinion about different aspects of the DPS in their country and in general (see Klipp et al., 2011). The next Sections present an overview of the main findings.

3.4.1 Offences and their severity

Generally, the opinions of the interviewees about the offences to be included and the exact way to take account of their severity were very diverse. However, there was one common point of view: offences should be included in a DPS depending on the risk constituted by an offence. It was recommended to consider both the risk exerted to other road users and the risk to oneself.

Concerning the overall aim of a DPS - which is also relevant for its design - most interviewees stressed the general and special preventive effect in order to reduce the number of road accidents. Acquiring or losing points is widely considered a tool to encourage road users to behave "better". Only a few mentioned disqualification of drivers who are not willing to obey rules as a goal of a DPS. As a conclusion, according to the interviewees, a DPS should constitute a threat, but not "hurt" citizens.

A vast majority of the interviewees from the four countries where offences are only counted (Austria, Denmark, Finland and the Netherlands) recommended adaptation of the system towards a scale of severity. On the other hand, many pointed to the need for simplicity of systems. This requirement would, again, vote against considering too many offences and the same offence at different levels. One interviewee proposed considering the typical fine as a criterion for the number of points being awarded to a specific offence.

Interviewees from countries with comprehensive lists of offences generally voted for a reduction of complexity. There is clear consensus that "The Big Three" should by all means be considered in a DPS: speeding, drink-driving and driving without seat belt. Most of the interviewees, when mentioning seat belts, also mentioned helmets for powered two-wheelers as well as child restraints. There are some specific requirements where single countries face unique problems, such as Malta for driving without valid third party insurance or CEE

countries for use of vehicles in poor technical condition. No explicit statement focused on either to include parking offences or not.

The Greek system was criticized to be too much of a composition of systems from other countries and too less of a measure considering national preconditions. On the other hand, interviewees from Latvia were positive about the German DPS having been used as a model for the Latvian system.

The interviewees frequently criticized the fact that many 'formal' offences, such as driving without a licence or insurance, were considered in their DPS and that some of these violations received more points than dangerous offences.

3.4.2 Number of points and point remission

There were no explicit statements about the desirable number of points for different offences, except for the interviewees from the countries that only count the number of offences. These held the opinion that a higher number of points would allow for consideration of severity of offences.

The opinions about how to consider multiple offences were as diverse as the DPSs diversely deal with multiple offences. There was no general pattern of interviewees recommending provisions which are not in place within their country or appreciation to the procedures that are in place. A slight majority of interviewees recommends consideration of multiple offences, but many would not be in favour of simply adding up the points for all the offences.

Some specific remarks and opinions about points came from countries where traffic offences are frequently judged and punished by courts. Interviewees from these countries seem to consider a DPS as a means of dealing with offences in a more administrative or even (almost) automatic way in order to lower the courts' workload, in particular for minor offences. They also noted that courts tend to focus on monetary punishment and neglect to determine the number of points in their decisions. In some countries there seem to be concerns about communication between policemen on the spot and the authorities dealing with the DPS as well as between courts and these authorities. It was proposed that courts should have to use a framework about relation between points and offences.

Although the majority of interviewees recommended a simple system when considering the lifetime of points, many proposed to consider the severity of offences. Some interviewees from countries with a very low lifetime of points (1 year) proposed an extension of the period.

3.5 Specific Case Evidence: drink-driving in Austria

Driving under the influence of alcohol (DUI) is a particular case since offenders may suffer from addiction. In these cases, dealing with DUI only by monetary punishment or withdrawal of the driving license for a certain period is unlikely to solve the underlying problem. Very low-level BAC offences (i.e. particular BAC levels which apply to novices and professional drivers) are an exception. High levels of BAC are unlikely to occur without an underlying problem of addiction. Hence, there is no indication to exclude DUI offences from DPSs, but there is a strong need to take respect of the possibility of an addiction. The same applies to drug offences which are likely but not necessarily linked to addiction.

All countries have their specific system of fines and licence withdrawal; they have a system of enforcement, some countries have specific measures for certain groups of road users, a number of countries also have special courses, and health and/or psychological testing

schemes for offenders in place. Hence, a DPS should always find a place within an existing system of punishment; mutual adaptation may be required. To some extent, a DPS may be implemented for the purpose of replacing (parts of) existing systems of punishment of repeat offenders.

Austria is one of the countries where a large variety of measures exists and serves therefore as an example to analyse the preconditions for designing a DPS. Since there are numerous of these provisions addressing a large variety of offences, the focus here is on alcohol offences.

It has to be reminded that Austria has a DPS in place that only counts the number of offences with a maximum threshold of three. Furthermore, it has to be noted that Austrian law discriminates between suspension and withdrawal of a driving license. Withdrawal only occurs (automatically) after a period of 18 months of suspension and entails that a driver has to go through (almost⁴) the full process of acquiring a driver license.

The Austrian DPS considers alcohol offences with a blood alcohol concentration (BAC) between 0,5‰ and 0,8‰. Within this range, offenders receive one point. The fine is between 300 and 3,700 Euros, and is determined by the responsible administrative body, considering the measured alcohol level and previous offences.

After a second offence within this range and within a period of 2 years, a driver improvement course has to be attended. The fine is determined on the same criteria. The lifetime of the point for the first offence is extended to three years. After a third offence within the lifetime of previous points, a driver is disqualified for three months at least.

Drivers may be obliged to attend a driver improvement course already after the first offence, if this is a multiple offence (which features more than one of the offences on the Austrian DPS offence list). In such cases, the driver will already be disqualified after a second offence. Drivers are also disqualified if they do not attend courses they were obliged to attend.

In addition, independent of the DPS:

1. If a driver declines an alcohol test, this will result in a disqualification of at least one month.
2. If an alcohol test is declined after a traffic accident or linked with excessive speed or if the driver leaves the accident scene without fulfilling his respective obligations or is driving without a valid licence, he is disqualified for three months.
3. If such a case occurs in conjunction with particularly dangerous behaviour, the driver is disqualified for six months.
4. If a driver is caught drink-driving with a BAC of 1.6‰ or more for the first time, there is a disqualification of at least six months; for the second time within five years, this will be at least twelve months.

Special rules apply for novice drivers. The Austrian system of "provisional driving licence" includes an exhaustive list of offences, where novice drivers are treated differently than all other drivers. This system could even be considered another kind of DPS, which applies specific intermediate measures, extension of the lifetime of points, and licence withdrawal in case of repeat offending. This system also considers a different threshold for driving under the influence of alcohol (0.1‰). The offence list includes many of the offences which are also in the list of offences for the general Austrian DPS. Beyond that, it includes speeding offences (which the Austrian DPS does not!). The legal conditions for other offences, in general, are not as complicated as they are for alcohol offences, but still complex.

⁴ They do not have to pass a theoretical test.

3.6 Sustainability issues

Sustainability of the effect of the DPS in relation to offences and points can be enhanced by:

1. Providing positive feedback after a short period without offences.
2. Having a longer lifetime of points for severer offences.

Both conditions could be met by a system of point remission that focusses on time rather than on single offences. If, for example, a driver gets rid of one point per year, 4-point offences survive longer than 2-point offences. A first point could go e.g. after 3 or 4 months given that no further offences are committed. Such a system would also extend the lifetime of points in case of recidivism within one year. For example, if a driver is sentenced for speeding (e.g. 4 points) on 17 August the proposed system will give back one point on 17 August of the following year. However, when this driver gets caught for speeding again on 16 August, no point will be given back and it takes another 364 days without an offence to get rid of that first point.

3.7 Conclusions and recommendations

3.7.1 Categories of offences

As a general rule, a DPS should include offences according to four criteria:

- There must be a strong relevance to road safety
 - likelihood of an offence resulting in an accident
 - risk exposed to other road users
 - risk exposed to oneself
- potential macroeconomic damage
- damnability of an offence
- particular national problems

Whether or not points are allocated in case of an offence should by no means depend on a case-by-case assessment against these four criteria. For example, cell phone use is considered dangerous and should be included in DPS regardless of the particular circumstances, i.e. avoiding clauses such as "cell phone use, if it has caused a dangerous situation".

Based on these criteria, facts and evidence as well as recommendations from interviewees, 24 offences categories are discussed in Table 3.2

Table 3.2 *Discussion of offence categories in a DPS.*

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| <ol style="list-style-type: none">1. Speeding should be included by all means given the risk induced by speeding offences.2. Driving under the influence of alcohol or drugs (DUI, DUID) should be included by all means, since there is evidence to which extent DUI and DUID raise accident risk. However, as there is a strong variability of severity of these offences they should be individually assessed with respect to potential problems linked to addiction.3. Seat belt wearing, helmet wearing and proper use of child restraints should be included by all means, given the scientific evidence about consequences of non-use.4. Post-accident misbehaviour, in particular leaving the scene without an attempt of lowering or limit consequences should be included by all means due to extreme damnability of this kind of behaviour as well as the potential of causing additional harm to victims.5. Dangerous behaviour should not be considered an offence per se, if no clear definition of "dangerous behaviour" is provided. If such a definition exists, respective behaviours may rather be included as a separate offence.6. Red light running should be included due to extreme risk exposed to other road users and the offender himself. |
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7. Violations of **priority rules** should be included due to risk exposed to other road users. Pointing should not depend on case-specific consequences of the offence.
8. **Causing an accident** should not be considered a separate offence. A DPSs should rather focus on the offence(s) triggering an accident.
9. Severe formal offences, such as **driving without a licence** (regardless whether as a result of previous disqualification or other reasons) or **driving without a valid insurance**, may be included.
10. **Vehicle license** offences are a difficult case. This group of offences needs to be assessed vis-à-vis national legal conditions and particular problems.
11. All kinds of offences at **pedestrian crossings** (maybe even parking offences, if the range of sight is encumbered) should be considered in a DPS.
12. Among **trajectory violations** (see. Appendix 3.I), if any, only the most severe ones should be considered.
13. **Technical condition**: For this kind of offences, there are three major issues to consider: a) Power of the driver to influence the technical condition: In particular professional drivers are depending on their employers to take care of the technical condition of the vehicles they are driving. DPS should carefully consider the distribution of liability between driver and owner of the vehicle. b) To which degree a driver would have been able to detect the malfunction. c) Formal offences should be considered according to the potential threat, e.g. violation of rules on periodic technical inspection increases the risk of actual malfunctions.
14. **Dangerous overtaking**: There should be a clear distinction which conditions make overtaking a dangerous manoeuvre, e.g. crossing solid double centre lines.
15. All kinds of illegal **cell phone** use should be considered in a DPS, the added risk by talking, texting and other related activities has been shown to be significant.
16. **Railway crossings**: All kind of offences at railway crossings should be considered as well as violations of the right of way of vehicles moving on rails.
17. Insufficient **time headway** should be considered in a DPS, but requires precise thresholds.
18. **Wrong way driving** (particularly on motorways) and the **use of forbidden lanes** may be considered a serious offence and should be included.
19. **Parking offences** should not be considered unless they induce severe risk.
20. **Cargo securing** may be included in a DPS, but similar issues to "technical condition" have to be considered. A lack of cargo securing is often not solely to blame to the driver.
21. **Vehicle lights**: Driving without daytime running lights might not be considered a severe offence worth including in a DPS. Driving without lights during the night, however, is a dangerous offence.
22. **Endangering passengers** e.g. by taking more passengers along than the vehicle is registered for. It may be considered for a DPS, but single agents of punishment might be effective as well.
23. Offences against rules on **driving hours and resting periods** may be included as long as the usual dependency of professional drivers from – and the shared responsibility with – employers and hauliers are adequately considered.
24. Other offences may considered in a DPS, e.g. particular road safety problems within a country, as long as they constitute a safety problem which is not likely to be adequately addressed by other means.

3.7.2 System of points and scale

For several offences it is recommended to make the number of points dependent on the level of severity. For speeding and alcohol offences it is recommended to distinguish between three or four levels, according to the level above the limit. For other offences it is recommended to distinguish between e.g. two levels, depending on circumstances:

- Wrong way driving may be considered more dangerous on dual carriageway roads.
- Post-accident misbehaviour could consider severity of the accident, the impact of misbehaviour and damnability of different offences within this group.
- Time headway could be considered according to the level under the limit, in case there is a legal limit.

Concluding from the information collected above, in case of simultaneous multiple offences, neither piling the number of points up nor just awarding the points for the most severe offence can be recommended. In order to avoid extraordinary hardship on the one hand and

irrational ignorance to cumulative misbehaviour on the other, "multiple offending" may be established as an extra offence, be awarded about 20 to 25% of the maximum (e.g. 2 points for a count-down from 10) and added to the most severe among the offences committed at a time.

Thresholds for intermediate measures like driver improvement courses are recommended to be placed more than one severe offence away from the initial value and more than one severe offence away from the disqualification level. Attending intermediate measures should reduce points, but never all points.

3.7.3 Mechanisms for point remission

Remission of points is often a very complicated process that has to consider for example, the overall lifetime of points, the amount of points given to one offence, multiple offences, and new offences which may prevent remission of points for previous offences. This all could be replaced by a much simpler, single mechanism: remission of points by time. If a point system e.g. counts down from ten to zero, the first point could, for example, be regained three months after the offence, the second one year after the offence. Later, one point per year could be regained. Doing so, severe offences that have resulted in a higher number of points, automatically remain in the system for a longer time, and repeat offences automatically interrupt the remission of points for previous offences. Moreover, such an approach also fulfils the recommendation to provide positive feedback already after a short period of time.

During a period of disqualification, the speed of point remission could be increased, e.g. one point per month. The duration of disqualification always would have to be long enough to arrive back at a level of points above zero. As an example: Imagine a DPS with an initial value of 10 bonus points and a driver who has 2 points left and then commits a 4-point offence. The result is minus 2. The driver is disqualified and needs to get back above zero. If one point per month of withdrawal is regained, the driver will arrive at 1 point after three months and will get his licence back. Another short period (e.g. 3 months) of keeping out of mischief will bring back another point. From then, it is 8 years to go for a clean slate.

In summary, a time dependent, simple and straightforward point mechanism could be:

- At "Start", receive 10 points.
- Lose points by offending.
- Lose more points by severe offending.
- Lose 2 additional points for a multiple offence.
- Get back one point already e.g. 3 months after the offence - for motivation.
- Get back one point every consecutive year.
- Licence withdrawal if all points are lost.
- Get back one point per month of being disqualified until a positive score is reached.

3.8 References

Aribaud, J (2006) *Mission d'évaluation sur le permis à points*. Paris, French Ministry of Interior and Ministry of Transportation.

Benedict, R. (1934) *Patterns of Culture*. Boston: Houghton Mifflin

Broughton, J. (2008) *Recent trends for speeding convictions and totting up disqualifications*. TRL Report 181. Crowthorn, Transport Research Laboratories.

- Kahneman, D. & Tversky, A. (1979) *Prospect theory: An analysis of decision under risk*. *Econometrica*, 47, 263-291.
- Klipp et al. (2011) *European Demerit Point Systems: Overview of their main features and expert opinions*. BestPoint Deliverable 1. Project No. MOVE/SUB/2010/D3/300-1/S12.569987-BestPoint. BAST, Bergisch Gladbach
- Kröber, A. & Kluckhohn, C. (1952) *Culture; a critical review of concepts and definitions*. Cambridge Mass. Peabody Museum.
- Redelmeier, D.A., Tibshirani, R.J. & Evans, L. (2003). *Traffic-law Enforcement and risk of death from motor-vehicle crashes: case crossover study*. *The Lancet* 361, 2177-2182.
- Saeed, A. et al. (2010) *Ocular injury requiring hospitalisation in the South East of Ireland: 2001-2007*. *Injury, International Journal Care Injured* 41, 86-91.
- Vaa T. (1998) International experiences with DPS. Working paper (Norwegian). Oslo, Institute for Transport Economics TØI.
- Zambon, F. et al. (2008) *Sustainability of the effects of the demerit points system on seat belt use: A region-wide before-and-after observational study in Italy*. *Accident Analysis and Prevention*, 40, 231-237.

Appendix 3.I Overview and description of the offences, included in DPSs in Europe

Post-accident misbehaviour

This offence type includes hit-and-run accidents, failing to stop for either supporting victims or witnessing; one country also included wrong securing of the accident site.

Speeding

The only country not including speeding offences in its DPS is Austria. Most countries consider severity, i.e. there are a different number of points awarded to different levels over the speed limit.

Dangerous behaviour

Some countries call it "reckless", some "endangering", some include "racing". The common issue within this offence is that it is unspecified to a certain extent. In some cases, this may be used to punish drivers, which - by common sense - appear to act dangerously, but the specific danger in their behaviour cannot be quantified by predefined parameters.

Alcohol (DUI)

It may seem remarkable that alcohol offences are included only in 10 countries. Some countries have offences combined with drugs; adding these, 13 countries include driving under the influence of alcohol (DUI) in their DPS (Austria, Bulgaria, Cyprus, Czech Republic, Germany, Great Britain, Hungary, Malta, Slovenia, Spain, France, Ireland, Latvia). Alcohol is top ranked in terms of points awarded. One reason may be that alcohol offenses are typically punished by sophisticated systems beyond DPS.

Red light running

This offence type includes failing to stop at a red light as well as ignoring other advice to stop the vehicle at a certain spot, i.e. signs by police or any other authority entitled to guide traffic or inspect vehicles. It does not include stopping at stop signs.

Priority rules

This includes failing to stop at a stop sign and all other kinds of violating the right of way of another road user, except pedestrians, which is considered in the category "pedestrian crossing".

Causing accident

Many countries vary number of points awarded to causing an accident according to severity of injury and/or degree of carelessness.

Driving license offences

This category includes only formal offences: All kinds of driving without a (valid) license or without the driving license document on board.

Vehicle license offences

This includes a couple of formal offences (vehicle license sheet unavailable, insurance not paid or prove of payment unavailable, license plate missing, vehicle registration expired, etc). This category does not include actually using a vehicle in improper technical condition.

Pedestrian crossing

This includes all kinds of misbehaviour at pedestrian crossings: Failure to give way to a pedestrian, overtaking, speeding, etc. A few countries also include other pedestrian-related offences in their systems, which were considered within this category.

Trajectory violation

This category includes all violations linked to choice of lane and driving directions, which are indicated by either road signs or road markings. It also includes all kinds of failures during lane change manoeuvres (i.e. crossing solid lines, lane change without use of turn indicator, etc).

Technical condition

This category does not include any formal offences. This category of offences means having used a vehicle in improper technical condition, e.g. worn-out tyres or defective brakes. Two countries also include exceeding of maximum weight, but these were categorised as cargo securing offences.

Overtaking

Crossing a continuous white line or double white line is a separate offence in some countries. These offences were put to the "trajectory violations", but are nevertheless closely linked to overtaking. In some countries the crossing of solid centre lines is also included (i.e. somewhat hidden) within rules about lane choice, lane keeping, reversing, turning, etc, as well as rules on particular behaviour on trunk roads. As a conclusion, almost all countries include dangerous behaviour linked to the "intention of being fast than other road users" in their DPS.

Alcohol/drugs

As indicated above, this has to be assessed with regard to both the "alcohol" offence type as well as "drugs".

Cell phone

This category includes all kinds of prohibited use of cell phone, in particular talking and texting. Greece also includes watching TV during driving in its DPS, which was also considered in this category.

Other

Offences with low relevance to traffic safety and with a low number of appearances in different countries were summarised in order not to extend the list of offence types. Some examples: damaging the road (e.g. by leaving dangerous substances), blocking other road users (e.g. by entering an intersection without being able to leave it within due course), use of radar warning devices and similar equipment, formal offences with respect to transport of passengers, violation of specific rules for transport of dangerous goods.

Railway crossing

Regardless of other categories (e.g. overtaking, speeding, trajectory violations) this includes all kinds of violations linked to crossing rails as well as violations of other rules about behaviour with respect to vehicles moving on rails.

Time headway

Some countries vary number of points considering the kind of vehicle the offender is using. Austria is the only country quantifying the exact values of time headway, which points are awarded to (0.2 to 0.4 seconds).

Seat belt

Only one country explicitly mentions non-use of seatbelt "by driver or passenger", but it remains unclear whether the driver is punished if a passenger is unbelted. If this would not be the case, the DPS would have to include all citizens - or points could only be given to passengers holding a driving license.

Wrong way driving

This includes all kinds of moving on a road in the wrong direction. Possibly the most dangerous among these offences is wrong-way driving on highways.

Drugs

Drug abuse also includes refusal of drug testing. This is possibly the most diverse offence. There are rather low minimum levels and the highest maximum pointing among all offences. It has to be noted that in some countries, alcohol and drug offences are combined offence (see alcohol/drugs in the table), hence it is 12 countries having these offences considered in their DPS.

Parking

This category includes simple parking offences, but also very dangerous offences like stopping a vehicle on the hard shoulder of a motorway without sufficient reason.

Cargo securing

This category includes both violations of the rules for securing cargo as well as incidents caused by lack of cargo securing. Some offences against rules about transport of dangerous goods are also included in this category.

Child restraint

This includes improper securing of children in motorised vehicles.

Helmet wearing

One of the key issues is including "proper" use of helmets, i.e. wearing a helmet is insufficient, the helmet has to be approved (ECE R22) and the chin strap has to be properly fastened. It could not be derived from all descriptions whether these issues are considered in all countries which include helmet wearing in their DPS.

Formal

This kind of offence appears only three times, it covers presenting outdated documents or not being able or willing to present them at all, if the offence cannot be clearly related to either driving license or vehicle license offences.

Endangering passengers

As far as derivable from the wording of the offences, this includes formal offences with respect to transport of passengers, i.e. exceeding the maximum number of passengers.

Vehicle lights

The majority of offences within this category is wrong use of lights during darkness (e.g. no lights, high instead of low beam where required), but also non-use of turn indicators, non-use of daytime running lights and unlighted parking during darkness.

Driving hours

This includes offences against rules for driving and resting hours. This offence is included only in one of the 20 countries.

4 Design of DPS: target groups

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4.1 Introduction

This Chapter will address two main questions. The first question is whether a DPS should be applied only to specific groups of citizens, and if so, to which groups. The second question is whether specific groups of road users should be treated in different ways than others within a DPS.

Considerations to answer these questions have to start with the identification of potential target groups, such as:

- Novice drivers and riders
- Pedestrians
- Bicyclists
- Professional drivers
- Repeat recidivists
- Elderly drivers
- Non-residents

The issue of including users of powered two-wheelers (PTW) separately was discussed. This group might have particular offence types (e.g. filtering, lane splitting), but differences to “normal” drivers were concluded not to justify treating PTW riders as a separate target group.

It must be remembered that drivers are not a homogenous group. They differ in age, by gender, by experience, by types of vehicles they are using and typical types of journeys. These differences can result in disparate collision risks between the various types of drivers, although they belong to the same group. This may be a reason to distinguish them as a separate target group within a DPS.

Distinguishing between different target groups can have different (combinations of) consequences:

- A DPS may exclusively apply to one or two target groups.
- A target group may get more or less points for particular offences.
- Different thresholds for disqualification and intermediate measures may apply for a target group.
- Additional measures may be applied for a target group.

In the next Section we will look at target groups that are currently distinguished in DPS countries in the EU and how they are treated. Section 4.3 gives an overview of facts and evidence in relation to potential DPS target groups. Further Sections discuss opinions and considerations of experts, the special case of the target group of professional drivers, and sustainability issues.

4.2 Similarities and differences between countries

Currently, out of the 21 EU Member States with a DPS in place, 19 address all drivers, 2 just address novice drivers. Generally, countries do not distinguish between car users and users

of powered two-wheelers, hence, where the term "driver" is used in the following, this also includes "riders".

Some of the current DPSs in the EU differentiate between target groups, in particular novice drivers, but some also look at pedestrians and bicyclists, professional drivers and repeat recidivists.

4.2.1 Novice drivers and riders

Malta and the Netherlands have a DPS for novice drivers only; in the case of Malta for three years of holding a probationary licence, in the Netherlands for the first five years.

Eight of the 19 countries with a DPS for licence holders apply different levels for disqualification for novice drivers: Denmark disqualifies after two instead of three offences within three years. Finland disqualifies after two instead of three offences within one year or three instead of four offences within two years, Great Britain at six instead of twelve, Latvia at 10 instead of 16 points and Poland at 20 instead of 24 points. France and Spain grant an initial bonus of six respectively eight instead of twelve points, Bulgaria 27 instead of 39. France requests novice drivers to attend driver improvement courses whereas for other drivers this is offered as voluntary option to regain points. Austria applies different rules to novice drivers within its probationary licence system with similar rules as DPSs in other countries: Novices have to attend a driver improvement course after the first rather than the 2nd offence. Furthermore, the probationary period is extended after an offence (equal effect of extending lifetime of points for novices) and speeding offences are included (the latter is not the case for the general Austrian DPS).

4.2.2 Pedestrians and bicyclists

Only a few countries consider offences by pedestrians and bicyclists. The only country awarding points to pedestrians is Germany, but only in case they hold a driving licence. Cyprus includes DUI offences if committed by bicyclists. Poland includes also other offences, if they are committed by a licence holder. In both of these countries, these rules are applied infrequently. Germany includes bicyclists in case of red-light running, DUI and if they endanger other road users.

4.2.3 Professional drivers

Most countries treat professional drivers just like all other drivers. In some countries, there are offences included in the system which typically or exclusively apply to professional drivers. Austria includes insufficient cargo securing and violations linked to transport of dangerous goods. Poland includes violations of rules on driving and resting hours. Austria and France apply a different threshold for DUI. Greece has a shorter lifetime of points (two instead of three years) for professional drivers. Italy separates between a "professional" and a "private" licence. Offences during professional driving are collected only in the "professional" record. In addition, convicted professional drivers have to attend different driver improvement courses, and nine instead of six points are discounted for attending these courses. Spain applies specific rules to professional drivers: the disqualification period is shorter (three instead of six months); they have to attend a specific driver improvement course and pass an additional theoretical test at a certain stage.

4.2.4 Repeat recidivist drivers

A group which has not been considered before are repeat recidivist drivers, i.e. the group of people who arrive at disqualification level more than once. France, Greece and Romania double their disqualification period. Austria, Denmark, Greece and Romania apply variable periods of disqualification, which may consider previous licence suspensions. Also outside Europe, there are several DPS countries that treat this group differently. For example, in Canada, most of the provinces apply specific rules to offenders who repeatedly are disqualified due to reaching the threshold. In most cases, the disqualification period is extended; some of the provinces apply a provisional period. In the USA, nine States disqualify drivers who repeatedly reach the maximum of points for a longer period.

4.3 Facts and Evidence

The following section provides information about differences between specific target groups and the average road user in order to support the decision whether or not to treat a target group differently within a DPS.

4.3.1 Novice drivers

Several studies highlight the unique properties of this group. The OECD/ECMT (2006) collected and analysed the relevant issues comprehensively. As reported in this overview, by far most of the novice drivers are also young drivers. This is, for example, also the case in Austria (Gatscha & Brandstätter, 2008). Hence, the term *novice drivers* in the following will assume that generally these drivers are also young; and even if not, most of the issues are applicable also to elder novices. Novice driver risk decreases by age, but is still above the risk of an experienced driver (Vlakveld, 2004).

Novice drivers differ from the average driver by

1. Juvenile risk: young drivers are more likely to take higher risks and have less control of risk in general (Kumpula & Paavola, 2008).
2. Over-confidence: a high degree of over-confidence in their driving skills and a poor estimate of the actual risk (Kumpula & Paavola, 2008, p71ff).
3. Lack of experience: a rule of thumb proposes that a driver can be expected to be "mature" after 100,000 km or seven years of experience. Lack of experience is less an issue of basic manoeuvring skills, there are several other elements of experience to consider, such as perception skills and anticipation of other road users' behaviour (Siegrist et al, 1999). In general, this high risk period is considered to last until the age of 24.
4. Different exposure: if crash occurrence is assumed to provide information on exposure, young drivers differ from other road users also in terms of exposure. Accidents involving young drivers are more frequent in the early morning hours of Saturdays and Sundays (OECD/ECTM, 2006).

The evidence concerning road safety effects of DPS for novice drivers is mixed, with disappointing results in the Netherlands, Great Britain and France, and on the other hand positive results in Germany, Austria, and Finland.

Vlakveld & Stipdonk (2009) investigated whether, after introduction of a licence on probation which included a DPS for novice drivers in the Netherlands, the number of severe crashes among young drivers (many of whom have a licence on probation) has seen a larger decrease than the number of crashes among a group of somewhat older drivers (of whom only a small percentage has a licence on probation). The number of severe crashes per

1.000 driving licence holders did not decrease more for the younger group than for the group of somewhat older drivers. This indicates that it is improbable that the licence on probation, as it has been applied in the Netherlands, has had a positive effect on the novice driver's involvement in crashes. It has also been investigated whether the data about the number of drivers who have incurred 0, 1, 2, or 3 demerit points offers sufficient ground to conclude that beginners put more effort into obeying the traffic rules after having incurred a demerit point. Taking as a premise that drivers do not change their behaviour and that the chance of incurring a second or third demerit point is equal to the chance of incurring the first point, a calculation of probability indicates that the numbers of drivers with 2 or 3 demerit points should be lower than the actual numbers. In other words: in reality novice drivers have incurred even more demerit points than would be the case if the DPS were to have no behavioural effect and would be a purely stochastic process. The fact that there are far fewer drivers with 2 demerit points than drivers with 1 point, and even fewer drivers with 3, is no basis to conclude that drivers obey the traffic rules better when they have incurred a demerit point. Therefore, on the basis of the observed distribution of demerit points (the numbers of drivers with 1, 2 and 3 demerit points that were reported in the media at different moments in time) it should not be concluded that the licence on probation, as it has been applied, has had a deterrent effect after a demerit point has been incurred. Neither the development of the number of crashes, nor the numbers of novice drivers with 1, 2 or 3 points, are reason to believe that the licence on probation, as it has been applied, has been an effective measure. This is no conclusive evidence that the licence on probation with the DPS has had no effect. It has, however, become evident that the effect cannot be made visible using the crash data (of six years before until five years after the introduction of the licence on probation). It has also been demonstrated that the distribution of points that has been reported in the media is no evidence for the licence on probation having had a deterrent effect.

Simpson et al. (2002) found no effect of a particular set-up of the point system for novice drivers in Great Britain. This research led to the introduction of strategies for deterring new drivers from committing offences, in particular the introduction of The Road Traffic (New Drivers) Act 1995 which came into force on 1 June 1997. The effect of the Act is that drivers who accumulate six or more penalty points on their driving licences within two years after first passing the driving test (the 'probationary period') have their driving licences revoked. They are then entitled to hold only a provisional licence until they pass both the theory and practical tests again. Penalty points gained up to three years before the driving test (the 'validity period') was passed are also counted when deciding if 6 points have been accumulated. It was assumed that this legislation would deter novice drivers from committing motoring offences, and consequently lead to reduced numbers of accidents. The study concludes that the expected deterrent effect did not occur.

In France, Chapelon (2008) evaluated the introduction of a very strict points regulation for novice drivers. Instead of 12 points, novice drivers with a probationary licence started out with 6 points. This regulation was so strict that even after one alcohol offence the probationary licence of novice drivers could be suspended. Chapelon found no evidence that this measure had any beneficial effect on fatal crashes or fatalities of novice drivers in France.

In Germany, a general preventative effect was shown in the first year after implementation of a special demerit point system for novice drivers, with decreases in the crash involvement of the target group or parts of it of about 5% (Meewes and Weissbrodt, 1992). The Austrian DPS system for novice drivers has been found effective in both reducing the number of injury accidents as well as the number of DUI-related accidents by about 11% (Bartl et al., 2000, p37ff). The Austrian driving license on probation has a probationary period of 2 years. There is a short catalogue of offences (e.g. DUI, speeding). If novices commit one of these, they are mandated to attend a driver improvement course and the probationary period is extended by one year up to three times. After a fourth offence within the extended probationary period,

physiological and psychological fitness have to be retested and the driving licence will be revoked if this appears to be reasonable. In Finland, the introduction of a special penalty points system for novice drivers resulted in a decrease in the number of repeat offences among young drivers (Hatakka et al., 2000).

4.3.2 *Pedestrians and bicyclists*

In relation to a DPS, pedestrians and bicyclists can be considered in two ways. First, as separate groups of road users who, independent of whether or not they hold a driving licence, can collect demerit points when committing offences that endanger others and themselves. In that case specific measures and punishments would be needed, since driver improvement courses and licence withdrawal are not relevant. Second, it is possible to consider offences of pedestrians and bicyclists only if they have a driver licence and points can be added to points collected as a driver of a motorised vehicle. The first option requires a much larger administrative organisation and is likely to be politically unfeasible.

When looking at the second option a relevant question is, what offences could be committed by pedestrians and bicyclists which would allow conclusions on their behaviours as drivers? Walking under the influence of alcohol might not be an appropriate offence - what should a drunk person do instead of walking? Possibly crossing the road on red light and dangerous interaction with other road users are the only relevant offences. There are many more rules to follow for bicyclists than for pedestrians. A majority of the offences currently included in DPSs (see Chapter 3) can also be committed by bicycle riders.

No relevant scientific evidence could be found on relations between misbehaviour of pedestrians or cyclists and the same persons as drivers. However, Varga (1996) found some evidence that delinquency apart from road traffic may be an indicator for likeability of traffic offences. Findings of Ewert (1999) indicate that delinquency in road traffic and other areas of life at least to some extent are influenced by the same aspects of personality. Donovan (1993) - after having examined behavioural and psychosocial correlates of drinking and driving in two independent samples of licensed drivers aged 18 to 25 - concluded "that drinking-driving is part of a more general lifestyle involving behaviour and psychosocial unconventionality".

4.3.3 *Professional Drivers*

There are several differences between professional and other drivers that are relevant when considering the need for a separate treatment within a DPS:

1. The exposure of professional drivers is up to ten times the exposure of an average car driver and, as such, they may be assumed to be very experienced drivers.
2. Their responsibility may be higher compared to normal drivers due to the higher levels of danger their vehicles exert to other road users considering higher mass. Bus drivers may carry the same number of passengers as plane pilots, but without cruise control doing their job for a considerable share of travelling time, without a traffic operator constantly supporting them and with substantially less training than pilots.
3. Their income depends on validity of their driving licence.
4. They are likely to be exposed to a high level of pressure applied by their employers or customers (Reisinger & Rieger, 2004).
5. In addition to the general traffic rules, they have to follow specific rules on, for example, driving times, rest periods and breaks, transport of dangerous goods, cargo securing, weekend driving bans, workplace safety, as well as several formal obligations.
6. They have less opportunities of excessive speeding, affected by speed limiters and the limited power of their vehicles in relation to the vehicle mass.

4.3.4 Elderly drivers

There is clear evidence that elderly drivers have an increased accident risk (Tränkle, 1994). A comparison between elderly and middle-aged drivers found that in laboratory tests, elderly performed worse, but "in driving tests in the overwhelming number of traffic situations the elderly did not differ unfavourably from the middle-aged drivers" (Schlag, 1993). Daigneault et al. (2002) found that prior accidents of older drivers are a better predictor to crashes than prior offences. Another analysis (Classen et al., 2011) based on data of the 2005 Florida Traffic Crash Records Database (N = 5,345 older drivers) found that older female drivers are at a greater risk for injuries from crash-related offences and driving errors. Steward (2002) analysed more than 3 million crash records from North Carolina. This study found the likelihood that a crash-involved driver was at-fault in all types of two-vehicle crashes increased steadily with increasing driver age. A driver was considered to be at-fault if the accident report indicated one or more offences associated with that driver and none with the other driver. Classen recommended that preventive measures must receive serious consideration and must be tested empirically for effectiveness. But there is no information available whether a DPS or specific treatment of elderly within a DPS would be useful.

4.3.5 Non-residents

Some questions on this topic have already been briefly discussed in Chapter 3 and will be discussed in more detail in Chapter 10. Currently, several EU Member States apply their DPS regardless of the origin and place of residence of a driver. Italy and the Czech Republic have separate registers for point owners with a driving licence from another country. Also the UK and Luxemburg have introduced "virtual licences" for foreign offenders. Ireland and Great Britain as well as Nordic countries have agreements of mutual recognition of offences and points. In the Czech Republic, 11% of the point owners hold a licence from another country. Malta, the Netherlands and Romania do not include non-residential drivers in their DPS.

4.4 Considerations and opinions

As part of the BestPoint project, several national experts were asked to answer questions about their opinions and considerations on a large variety of issues related to DPSs, including the usefulness and needs for differentiating between different target groups (see Klipp et al., 2011).

Several arguments were given to apply different rules for *novice drivers* within a DPS. The most common argument was that it is easier to bring about correct behaviour than to change incorrect behaviour, suggesting that, in case of offences, a DPS for novice drivers would need to take action at an earlier stage than for more experienced drivers. High crash risk and juvenile carelessness are other frequently quoted arguments. Only a small minority of interviewees categorically rejected the idea of unequal treatment of different road user groups.

With respect to *pedestrians*, interviewees' opinions are quite diverse, ranging from apodictic denial to encouraged promotion of including them in a DPS. Walking under the influence of alcohol was doubted being an offence relevant for a DPS. Some interviewees proposed red light walking as the only relevant offence assuming that misbehaviour as a pedestrian is a predictor to misbehaviour as a driver. However, a majority of interviewees was against including pedestrian offences in a DPS from an administrative point of view; when just considering the preventive effect it may have, a majority would include pedestrians.

Some of the arguments for including pedestrian offences in a DPS were also used with respect to *bicyclists*. Although the majority of the DPSs currently in place do not consider bicyclists, a vast majority of interviewees supported inclusion of (relevant) offences committed by bicyclists. However, they stressed that the offences to be included should be relevant to road safety and assumed the number of relevant offences to be low.

Only two of the interviewees addressed *elderly drivers*. To their opinion, a DPS could be used to identify unfit drivers, since some offences, e.g. those related to right-of-way and gap acceptance, may be the result of functional shortcomings (e.g. see Classen et al., 2011).

Interviewees frequently mentioned an obvious relationship between general behaviour in road traffic and reliability for driving a motorised vehicle. Remarkably, many of these interviewees mentioned that they cannot prove such a relation. Nevertheless, a majority of interviewees was in favour of including offences by all road user groups, including pedestrians, bicyclists, and drivers from other countries.

4.5 Specific Case Evidence: Professional Drivers

When considering professional drivers in relation to a DPS, it must be considered that they are a very specific group of drivers and that there is comprehensive European legislation for this group. One relevant aspect is that professional drivers receive more training and re-training than average drivers. Respective legal provisions are included in the "professional driver Directive" (Directive 2003/59/EC) and apply to bus drivers from September 2008 and truck drivers from September 2009.

Another piece of European legislation relates to the shared responsibility between drivers and their employers. Directive 2006/22/EC within its Article 9 mandates Member States to "introduce a risk rating system for undertakings based on the relative number and severity of any infringements of Regulations (EEC) No 3820/85 or (EEC) No 3821/85 that an individual undertaking has committed". This refers to installation of equipment for recording working hours on heavy goods vehicles and busses as well as infringements of rules on driving and resting hours.

When implementing their DPS and applying it to professional drivers as well, without any specific provisions, France faced extensive resistance from truck drivers, including strikes, demonstrations and drivers blocking roads, because they considered a DPS to be endangering their income. Nevertheless, France succeeded with the implementation. Specific attention was drawn, however, to problems related to drivers under pressure of their employers and specific measures were implemented to relieve them from such pressure. As a result, the DPS did not turn out to be a particular problem to professional drivers.

Within the BestPoint survey, feedback of the interviewees on professional drivers as a particular target group significantly differed from feedback on other target groups. On an average, the remarks were much longer, they included more facts and fewer opinions than for other target groups; and they contained fewer clear recommendations. Interviewees highlighted the problems of this target group instead of providing their opinion on how to solve them. All this may indicate that the place of professional drivers in a DPS is sensitive and not so straightforward. Interviewees pointed out the specific responsibility of professional drivers, their exposure, their dependence to their driving licence, their typical offences as well as the pressure they are often working under. From the same arguments, some interviewees concluded that professional drivers should be treated stricter, while others vote for less strict treatment. A majority of interviewees proposed equal treatment.

4.6 Sustainability Issues

Strongest relevance of the structure and treatment of target groups with respect to long term effects may be spotted within the question of how to integrate road users not holding a driving license. Scientific evidence as well as information from interviews in BestPoint support inclusion of citizens who do not, not yet or not any more hold a driving licence. In that case a DPS can be considered as an additional tool to assess the reliability of applicants for a driving licence.

4.7 Conclusions and Recommendations

This chapter reported on facts and opinions in order to conclude, whether there are particular groups of road users that require different treatment either in terms of offences to be included in a DPS or in the lifetime of points and thresholds for intermediate measures such as driver improvement courses.

Novice drivers

Both scientific evidence and expert opinions clearly indicate that novice drivers should receive particular treatment. Both general as well as special prevention effects should be amplified by lowering thresholds for intermediate measures and disqualification. There is no need to include additional offences. For speeding and driving under the influence of alcohol, thresholds for considering them in a DPS should be lower for novice drivers. There is no support to altering the duration of disqualification. A selective effect is of low relevance, measures have to achieve correction of behaviour.

Professional drivers

Professional drivers' high responsibility for safety of other road users and their high exposure to enforcement are impacts which may strike out each other. Application of different thresholds for DUI seems justified. Offences to be considered for a DPS (such as drive & rest times, cargo securing) should carefully consider professional drivers' dependencies to other stakeholders of the transport industry, such as employers, vehicle owners, people responsible for loading, in terms of dangerous goods also hauliers.

Elderly drivers

For elderly drivers, a DPS could serve as a tool to detect unfit drivers. Hence, the selective effect might be most important. Automatic disqualification for a certain period is inappropriate; testing of physical and mental fitness may be applied instead.

Non-residents

The problem of including road users holding driving licences from other countries in their DPS was overcome by many Member States. Regarding the current efforts of the European Union in terms of cross-border enforcement, an international exchange of information on offences relevant to DPSs of the Member States should be an important goal. This issue is treated in a wider context in Chapter 10. In any case, a DPS has to consider four parameters: Nationality of an offender, the country having issued the driving license, the country of permanent residence and the country where the offence has been committed.

Pedestrians, cyclists and non-licence holders

Scientific evidence and a majority of interviewees recommend inclusion of all road users (i.e. pedestrians, cyclists, drivers not yet or not any more holding a license) in a DPS. Committing offences is linked to personality, regardless whether the same person is driving, cycling or walking. On the other hand, there are serious concerns about relevant offences by pedestrians and bicyclists and about the administrative burden in relation to the potential benefits.

4.8 References

- Bartl et al. (2000). *Driving license on probation and accident reduction*. In: Bartl (Ed.) DAN-Report. Vienna, KfV Kuratorium für Verkehrssicherheit.
- Chapelon, J. (2008). *La politique de sécurité routière*. Lavoisier, Paris.
- Classen, S., Shechtman, O., Joo, Y., Awadzi, K.D., Lanford, D. (2011) *Traffic violations versus driving errors*. Transportation Research Board, Conference Proceedings 46, Women's Issues in Transportation. Summary of the 4th International Conference, October 27-30, 2009, Irvine, California.
- Daigneault, G., Joly, P., Frigon, J.-Y. (2002). *Previous convictions or accidents and the risk of subsequent accidents of older drivers*. Accident Analysis & Prevention, Vol.34, No.2, p 257-26.
- Directive 2003/59/EC of the European Parliament and of the Council of 15 July 2003 on the initial qualification and periodic training of drivers of certain road vehicles for the carriage of goods or passengers, amending Council Regulation (EEC) No 3820/85 and Council Directive 91/439/EEC and repealing Council Directive 76/914/EEC (OJ L 226, 10.9.2003, p. 4), last amendment by Regulation (EC) No 1137/2008 of the European Parliament and of the Council of 22 October 2008 (OJ L 311 1 21.11.2008).
- Directive 2006/22/EC of the European Parliament and of the Council of 15 March 2006 on minimum conditions for the implementation of Council Regulations (EEC) No 3820/85 and (EEC) No 3821/85 concerning social legislation relating to road transport activities and repealing Council Directive 88/599/EEC.
- Donovan, J.E. (1993). *Young adult drinking-driving: behavioral and psychosocial correlates*. Journal of Studies on Alcohol, Vol.54 No.5, p. 600-613.
- Ewert, U. (1999) *Reaktante Einstellungen gegenüber Verkehrsgesetzen: Auswertungen aus der Studie SARTRE 2*. In: Meyer-Gramcko, F. (Hrsg.): Verkehrspsychologie auf neuen Wegen: Herausforderungen von Straße, Wasser, Luft und Schiene (II). 37. BDP-Kongreß für Verkehrspsychologie. Braunschweig, 14.-16. September 1998. Bonn, Deutscher Psychologen Verlag GmbH, p. 730-736.
- Gatscha M. & Brandstätter C. (2008) *Evaluation der zweiten Ausbildungsphase in Österreich*. Forschungsarbeiten aus dem Verkehrswesen Band 173. Vienna, Bundesministerium für Verkehr, Innovation und Technologie (Hrsg.).
- Hatakka, M., E. Keskinen, A. Katila, S. Laapotti and M. Peräaho (2000), "A Follow-up Study 1996-1998 on the Effects of a Revised Penalty System for Traffic Offences" (in Finnish), in Reports and Memoranda of the Ministry of Transport and Communications, Ministry of Transport and Communications, Helsinki.
- Klipp S. et al. (2011) *European Demerit Point Systems: overview of their main features and expert opinions*. Deliverable 1 of the BestPoint project. Bergisch Gladbach, Bundesanstalt für Strassenwesen BAST,
- Kumpula, H. & Paavola, M. (2008) *Injuries and risk-taking among young people in Europe – The European situation analysis*. EU-Project AdRisk. Helsinki, KTL National Public Health Institute.
<http://www.eurosafe.eu.com/csi/eurosafe2006.nsf/wwwVwContent/14theuropeansituationanalysis-adrisk3.htm?OpenDocument> (2012 03 16).

- Meewes, V. & Weissbrodt, G. (1992). *Führerschein auf Probe - Auswirkung auf die Verkehrssicherheit*. In: Schriftenreihe der Bundesanstalt für Straßenwesen, Unfall- und Sicherheitsforschung Straßenverkehr, Heft 87. Bergisch Gladbach, Bundesanstalt für Strassenwesen BAST.
- OECD/ECMT (2006). *Young drivers, the road to safety*. Paris, OECD/ECMT Transport Research Centre.
- Reisinger A. & Rieger E. (2004) *Schwarzbuch Straße - Die subventionierte Transportlawine*. Auflage 2004. Vienna, Frankfurt, Franz Deuticke Verlagsges.m.b.H.
- Schlag, B. (1993). Elderly drivers in Germany - fitness and driving behavior. *Accident Analysis & Prevention*, Vol.25 No.1, p. 47-55.
- Siegrist, S. (ed.) (1999) Driver training, testing and licensing: Towards theory-based management of young drivers' injury risk in road traffic. Results of EU-project GADGET, Guarding Automobile Drivers through Guidance Education and Technology, Work Package 3. bfu report 40.
- Simpson, H., Chinn,L., Stone, J. Elliot, M. & Knowles, J. (2002). *Monitoring and evaluation of safety measures for new drivers*. TRL525. Crowthorne, Transport Research Laboratory.
- Stewart, J.R., Reinfurt, D.W., Stutts, J.C., Rodgman, E.A. (1999) *At-fault crashes and casualties associated with older drivers*. Association for the Advancement of Automotive Medicine (AAAM); 43rd Annual Proceedings.
- Sweedler, B. & Stewart, K. (2007) *Unlicensed driving worldwide; the scope of the problem and countermeasures*. Safety and Policy Analysis International, L.L.C. Lafayette, California, USA.
- Tränkle, U. (1994). *Autofahren im Alter: Antworten und offene Fragen*. Mensch - Fahrzeug - Umwelt Band 30, p. 361-375.
- Varga, T. (Ed.) (1996) *Traffic accidents and their main causes in Hungary*. Szeged, Albert Szent-Györgyi Medical University, Department of Forensic Medicine.
- Vlakveld, W.P. (2004). *New policy proposals for novice drivers in the Netherlands*. In: Behavioural Research in Road Safety 2004, Fourteenth Seminar. London, Department for Transport.
- Vlakveld, W.P. & Stipdonk, H. (2009) *Eerste verkenning naar de effectiviteit van het beginnersrijbewijs in Nederland*. D-2009-2. Leidschendam, SWOV Institute for Road Safety Research.
- Watson, B. (2007). *Unlicensed driving: an Australian perspective*. Presentation at the Transportation Research Board 86th Annual Meeting, Washington, D.C. January 2007.

5 Support measures: police enforcement

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5.1 Introduction

As already briefly described in Chapter 2, a Demerit Point Systems (DPS) can be seen as a supplement to the traffic enforcement system. The purpose of enforcement and DPS is to improve road safety by reducing and preventing unlawful behaviour of road users. The effects of enforcement on road safety depend on several things: frequency of traffic rule violations, the capability of enforcement to catch offenders, the sanctions to offenders and the visibility of enforcement to the general public. The additional element that a DPS brings to enforcement concerns the focus on road users – usually owners of a driving licence – who repeatedly commit traffic offences. The underlying logic of a DPS is that in addition to sanctions for single offences, frequent offenders need supplementary sanctions such as withdrawal of driving licence for a certain period.

When we consider the role of enforcement in connection with DPS, the main element is its capability to catch drivers who repeatedly commit offences. Then the level of enforcement is a key issue. For an effective DPS it is essential that the level of enforcement is at a sufficient level so that road users who have been caught once feel that there is a real risk of being caught again if they commit further offences (i.e. within the time period the demerit points issued for previous offence(s) are still valid). In other words, road users' *subjective risk* of getting caught must be at a sufficient level. This subjective risk depends, among other things, on the actual, *objective risk* of getting caught. Other potential factors affecting subjective risk concern e.g. supportive measures, such as communication and information campaigns concerning enforcement.

Perhaps the most desirable effect of enforcement is that it *prevents* road users from committing offences, in the fear of punishment. This is true for all road users but in connection with a DPS especially for those road users who have already collected demerit points, and want to avoid getting further points. A DPS can also strengthen the aim of enforcement to *select* and remove from traffic reckless drivers before they cause accidents.

In short, the impact of enforcement on the effectiveness of a DPS depends on the possibilities of enforcement to catch road users for different kinds of offences so that offences that are strongest associated with risk of severe accidents are especially targeted.

In this chapter we aim to analyse the role of enforcement in the existing DPS systems in EU countries and the impacts of enforcement on the effectiveness of DPS by examining the following questions:

- How do the level of enforcement, its target offences and enforcement practices, methods and tools vary among countries with existing DPS systems?
- What factual information and research results exist about the role of enforcement in connection of DPS?
- How should enforcement issues be taken into account in the development of a sustainable DPS, i.e. a DPS for which the positive effects on safety remain or even increase rather than diminish with time)?
- How do experts in different countries assess enforcement in connection with DPS?

5.2 Similarities and differences between countries

5.2.1 Enforcement strategies, methods and priorities

Enforcement strategies are relatively similar in European countries although the methods differ from country to country. The literature (e.g. ETSC 4th PIN Report, 2010 and EU Project PEPPER – final report, 2008) provides us with the list of methods used in selected European countries. Based on the literature (e.g. SafetyNet, 2009) the basic classification of the enforcement methods can be as follows: police patrols and automatic.

Automatic enforcement:

The development of digital video and image processing technologies in addition to the electronic identification of vehicles has enabled and improved automatic enforcement. Automatic enforcement is mainly focused on speed and red light violations. Increasingly, we can come across automated traffic enforcement which allows controlling seat belt use, safety distance and lane keeping as well as toll payment and many more. A variety of technologies is used in automatic enforcement of different traffic rules. They include radar, video, laser, loops, piezoelectric cables and many others.

Police patrols:

In case of police patrols, officers trace traffic offences while driving in road traffic or standing at the roadside and they stop offenders immediately for sanctioning. Police checks can be random or systematic, i.e. with a special focus on particular groups of drivers or/and problems, such as speeding, seat belt use, and drink driving.

These methods are commonly implemented in order to prevent the main causes of deaths and injuries in traffic: speeding, driving under the influence of alcohol and non-use of a seat belt, as recommended by the European Commission (2004). *Table 5.1* gives an overview of the enforcement methods for these three types of violations.

Table 5.1 *Enforcement methods for three major violation types.*

Enforcement methods	Enforcement		
	Speeding	Seat belt use	Drink driving
Automatic	<ul style="list-style-type: none">fixed speed camerasmobile speed camerassection/average speed control	<ul style="list-style-type: none">fixed camerasmobile cameras	-
Police patrols	<ul style="list-style-type: none">speed checks by radar or laser device	<ul style="list-style-type: none">random checksfocused checks	<ul style="list-style-type: none">random breath testingfocused breath testing

5.2.2 Enforcement levels

The 4th PIN Report (ETSC, 2010), SafetyNet (2009), and the PEPPER final report (2008) are primary sources of the enforcement levels statistics, some of them are presented below. Based on BestPoint interviews we know that countries vary in the available information on the enforcement levels and outcomes. For example, information on licence suspensions or withdrawals is available from less than half of the countries with a DPS (*Table 5.2*).

Table 5.2 *Information on number of licence suspensions/withdrawals due to DPS*

Country	Number of licence suspensions/withdrawals due to DPS	% of total number of licences
Czech Republic	30,341	0.45
Denmark	1,125 (conditional withdrawals) 515 (unconditional withdrawals)	
Finland	9,000	0.25
France	92,123	0.25
Great Britain	22,000	

Regarding enforcement levels, the most comprehensive information concerns speeding and drink driving. The number of speed tickets issued per 1,000 population in one year is the highest in the Netherlands, Austria and Switzerland, where safety cameras (and partly section controls) have been used extensively. In contrast, being fined for speeding is rather an exception in Portugal, Lithuania, the Czech Republic, Bulgaria, Italy, Slovakia, Sweden, Hungary, Israel and Poland (*Table 5.3*).

Table 5.3 *Number of speed tickets per 1,000 inhabitants (both police roadside checks and from speed cameras) (Source: ETSC, 2011).*

Country	Yearly speed tickets per 1,000 population		
	2006	2007	2008
The Netherlands	543	595	558
Austria	327	458	456
Switzerland	350	335	n/a
France	114	127	138
Cyprus	87	165	137
Slovenia	n/a	n/a	72
Norway	52	52	51
Romania	n/a	n/a	51
Finland	38	42	50
Latvia	41	45	49
Denmark	47	48	45
Spain	17	27	44
Luxembourg	48	49	42
Ireland	n/a	45	40
Poland	28	32	34
Israel	22	22	30
Hungary	17	16	29
Sweden	21	24	25
Slovakia	25	21	24
Italy	23	25	24
Bulgaria	13	18	20
Czech Republic	30	21	17
Lithuania	18	20	10
Portugal	9	n/a	n/a

In countries where speed cameras are applied they are often the primary tool for speed enforcement. The number of speed cameras is highest in the UK, Germany and France with more than 2,000 speed cameras, whereas in Portugal there are only 30; the number of cameras per population is highest in Belgium, Austria and Sweden (*Table 5.4*).

Table 5.4 *Intensity of fixed speed camera enforcement in a number of European countries*
(Source: Goldenbeld, 2011)

Countries	Inhabitants in millions*	Number fixed speed/red light cameras**	Number of devices per population	Additional information
Moderate to high enforcement:				
Austria	8	1100	1: 7,300	
Belgium	10	1700	1: 5,900	Crevits (2011)
France	65	2500	1: 26,000	Carnis et al. (2008)
Germany	81	3700	1: 22,000	
Netherlands	17	1400	1: 12,000	ICF Consulting (2003) , SWOV (2009b)
Sweden	9	1100	1: 8,100	Belin et al. (2010)
UK	63	5500	1: 12,000	ICF Consulting (2003)
Low speed enforcement:				
Bulgaria	7	81	1: 86,000	
Portugal	11	30	1: 366,000	
Spain	47	1300	1: 36,000	
* Rounded numbers ** Source: Speed Camera Database accessed 27 th October 2011 http://www.scdb.info/				

The number of roadside police checks for alcohol per 1000 inhabitants is the highest in Finland, Norway and Sweden, where 385, 338 and 287 drivers respectively per 1000 population were checked in 2008 (*Table 5.5*). It is also relatively high in Slovenia, France and Cyprus. Nevertheless the chance of a driver being breath tested during one year is only about 1 in 5 on average.

Table 5.5 *Numbers of roadside alcohol breath tests (per 1,000 inhabitants) and percentage of those tested found to be above the legal limit (Source: ETSC, 2010).*

Country	2006		2007		2008	
	Roadside police tests per 1,000 population	Drivers above legal limit, %	Roadside police tests per 1,000 population	Drivers above legal limit, %	Roadside police tests per 1,000 population	Drivers above legal limit, %
Finland	n/a	n/a	318	1.6	385	1.3
Norway	n/a	n/a	n/a	n/a	338	n/a
Sweden	264	0.9	292	0.8	287	0.8
Slovenia	162	8.0	191	7.3	200	5.8
France	186	3.2	182	3.3	190	3.3
Cyprus	90	6.2	149	6.8	182	5.9
Greece	118	3.4	143	2.9	135	3.1
Hungary	144	2.9	143	3.2	130	3.1
Ireland	n/a	n/a	113	4.1	128	3.2
Spain	88	2.5	96	2.2	112	1.8
Estonia	76	0.9	68	1.0	95	1.1
Austria	56	9.4	77	7.0	87	5.8
Israel	4	16.5	24	5.1	69	2.2
Portugal	48	7.3	56	5.6	63	5.9
Poland	n/a	n/a	n/a	n/a	47	9.5
Lithuania	31	1.4	34	1.6	40	1.7
Denmark	n/a	n/a	n/a	n/a	36	n/a
Italy	4	n/a	12	n/a	23	n/a
Great Britain	10	17.4	10	16.3	n/a	n/a

5.3 Facts and evidence

The potential of a DPS in improving road safety depends on the properties of the enforcement system prior to the implementation of the DPS, and concurrent changes in enforcement levels if any. In order to fully understand how enforcement can contribute to the road safety potential of a DPS it is necessary to have basic knowledge of the road safety potential of enforcement in general. In the following we first summarise current knowledge of the effects of enforcement on road safety in general and then assess the role of enforcement in a DPS.

5.3.1 Road safety potential of enforcement in general

Many studies have found that the combination of enforcement and penalties prevent the violation of traffic regulations and increase road safety (SWOV, 2009a). The traffic safety potential of enforcement depends on the level of enforcement and the kinds of offences that are targeted. Effective enforcement focuses on offences that have large and proven effect on the frequency or severity of accidents. The offences that most frequently contribute to road accidents concern speeding, non-use of seat belts and drink driving (ETSC 2011). In the following the effects of enforcement of these offences on accidents and road user behaviour are summarized.

Concerning the effects of speed on accidents, accidents increase with speed exponentially. Decreases in fatal accidents are related approximately to the 4th power of the decrease in mean speed, and serious injury accidents (those involving death or any injury) to the 2nd power; and on rural roads the exponents are greater than on urban roads (Elvik, 2010). For example, if the mean speed on the road with 80 km/h speed limit decreases by 5 km/h from 86 to 81 km/h (i.e. by a factor of 0.942) the number of fatal accidents can be expected to reduce by 21.3% ($1-0.942^4$).

In the United Kingdom, France and Norway speed cameras have reduced speeds by 5 - 7 km/h (SUPREME, 2007). In a recent meta-analysis (Elvik et al., 2009) speed cameras were found to reduce the number of injury accidents by 16% (95% confidence interval -23; -9). The decrease in the number of fatal accidents was even larger, 39% (7–50%). Stationary visible enforcement by radar or laser device decreased the number of accidents of unspecified severity by 17% (-31; -2). Other reviews have reposted similar effects of speed cameras (Gains et al., 2005, Thomas et al., 2008; Wilson et al., 2006; in: SWOV, 2009b). According to Erke et al. (2009) fixed speed cameras reduced the number of injury accidents by 35% (-43; -25) and mobile speed cameras by 14% (-29; +5). The reductions in the number of fatal accidents were higher: for fixed speed cameras 39% (-50; -25) and for mobile speed cameras -32% (-39; -24). Results from Australia and New Zealand show that the effects of hidden mobile cameras radiate over a larger area than the effects of fixed position cameras. Hence, although fixed position cameras may often have a greater safety effect per specific location, hidden mobile cameras can reach a larger area (Delaney, Diamantopoulou & Cameron, 2003; in: SWOV 2009b). The effects of speed enforcement may be limited in time and space (see e.g. Safety Net, 2009). OECD (2006) provides an excellent summary of the various aspects of speed enforcement.

Regarding seat belt enforcement, a meta-analysis of studies found that enforcement increases seat belt use by 21% (+16; +27) during the enforcement period, and by 15% (+10; +20) afterwards (Elvik et al., 2009). The increase in seat belt wearing rate reduces fatalities and injuries to vehicle occupants. Wearing of seat belts reduces car driver fatalities by 45%. Regarding drink driving, the risk of injury accident increases with driver' increasing blood alcohol content (BAC) so that at levels above 0.1% it is increased by a factor of at least 20 (Elvik et al., 2009). ETSC (2011) shows that the proportion of drivers exceeding the legal limit has decreased with increasing enforcement in several countries. A meta-analysis of studies concluded that police patrols where drivers are stopped for testing can reduce accidents by up to 13% (-12; -14) (Elvik et al., 2009). It was also concluded that the effect is likely to be greater when all drivers are stopped and tested (random breath testing).

It should be taken into account that the effects of enforcement as reported in evaluation studies vary widely because of differences e.g. in the initial compliance level and the intensity of (the change in) enforcement. In addition to the above offences other types of traffic violations (e.g. dangerous overtaking and reckless driving) also have a negative effect on traffic safety. From the viewpoint of enforcement, however, offenders are often more difficult to catch in large quantities without substantial increase of police manpower, or increase in automated detection devices.

5.3.2 Contribution of enforcement to the road safety potential of DPS

No studies were found about the specific influence of enforcement on the effectiveness of DPS. The question was then approached by examining scientific articles about the effects of DPS on accidents and injuries, and especially articles that have reported positive effects.

In Spain DPS came into force in July 2006 and was reported to have decreased road fatalities by 15–18% and injuries by 19% (Costillo-Manzano et al., 2010; Pulido et al., 2010). The studies do not, however, take into consideration the possible changes in enforcement levels coinciding with introduction of DPS. For example, the annual number of alcohol breath

tests per population increased by 9% and the annual number of speed tickets per population increased by 59% during the study period (ETSC 2011). This raises the question whether the positive effects were more influenced by increased enforcement rather than DPS.

Other countries where DPS has been reported to have positive safety effects include Brazil (Poli de Figueiredo et al., 2001), Ireland (Hussain et al., 2006) and Italy (Farchi et al., 2007; Zambon et al., 2007; 2008). In Brazil the introduction of the DPS was accompanied by a large increase in fines (in some cases ten-fold). In Ireland considerable attention was given in the media to the introduction of the new legislation and to the penalties associated with speeding in 2002, but no changes occurred in the enforcement of existing traffic laws during the study period. Regarding Italy, it is not known how the introduction of DPS in June 2003 affected enforcement levels, but Farchi et al. (2007) reported that “the point system was particularly effective when enforcement was particularly strong, as in the first months of its application”. Especially in cases where the initial level of enforcement was relatively low, the reported positive effects of DPS may well have been at least partly due to the coinciding increase in enforcement and media attention at the time of introduction. This type of indirect evidence suggests that the level of enforcement is an important factor for the effectiveness of a DPS.

5.4 Expert opinions and considerations

5.4.1 Levels of enforcement

During data collection on DPS in European countries within BestPoint experts were asked about their opinions concerning various aspects of DPS and if they based their opinions on evidence (see Klipp et al., 2011). Regarding enforcement levels, the most frequent answer was that it is too low because there is not enough police and administrative staff funding to guarantee the proper level of enforcement. Some experts declared that there is no information available regarding satisfactory / unsatisfactory number of staff or budget etc. In contrast there are also countries which indicate that the system runs effectively with adequate budget and number of staff, such as Ireland and Latvia.

5.4.2 Driver versus owner liability

The term driver liability refers to the legal system in which driver is made liable for the offences detected by automatic enforcement (such as speed cameras), whereas owner liability makes the owner responsible for the violation if the driver cannot be identified.

As compared to police patrols, automatic enforcement substantially increases the objective, and hence the subjective chance of being caught for a violation. As indicated this is likely to increase the effect of a DPS. Automatic enforcement, however, introduces the question of driver versus owner liability.

In case of driver liability, drivers are made liable for the offence they committed in any case, and, hence, it must be ensured that the person who committed the offence gets the points. That means that in case of an offence the driver must be identified. This is no problem if the driver is caught on the spot. Problems, however, may occur when automatically detected offences are included in the DPS, at least in jurisdictions that apply vehicle owner liability and cameras only register the licence plate. In these cases, it may be impossible to identify the driver, and offenders may remain without punishment in terms of points. Administrative procedures are easier if it is not necessary for the authorities to identify the driver, but if instead the vehicle owner is liable. In case of owner liability, it is left to the owner either to pay the fine and take the points or to object for not having been the driver. Points could be given to the owner if he does not nominate the driver. If a vehicle owner is not the offender,

he may be forced to nominate the driver in order to enable authorities to punish the right person. That is called mandatory nomination of the driver.

In general, national experts are in favour of driver liability (Table 5.6). The reason they give is that the person who committed the offence should be penalised. Punishing a person who did not commit the violation, as may be the case if the vehicle owner is liable, would probably lessen the confidence in the system. Experts have the opinion that in case of automatically detected violations the owner should be obliged to nominate the driver, who committed the offence. However, some experts also state that the vehicle owner is at least partly responsible as well, since he/she should not have given the car to an unreliable person.

Table 5.6 *Opinions of experts regarding desirability of driver or owner liability*

Driver liability	Person who committed the offence should be penalised (AT, FI, EL, IE, LU, MT, PL)
	Owner should be penalised – ticket (administrative fine) not points if he doesn't indicate the driver (AT, CZ, FR)
	When owner has to point the driver it is a good way to deceive system (IT, HU)
	Finding the offender is problematic (UK, LU)
	Current system makes owner responsible – it is wrong (MT)
	Authorities are responsible to find the offender (EL)
Owner liability	Offender should receive the points in any case ; it should be driver liability primarily and owner liability subsequently (AT, FI, FR, DE, EL, PL)
	The owner should be responsible as well; because he/she doesn't give the car to an unreliable person. (AT, CZ, DE, UK, HU, LU)
	This is wrong; there should not be a penalty without guilt. (DE, PL, EL)
Mandatory nomination of the driver	Possibility of cheating the system shall be avoided (AT)
	Owner should be obliged to name the driver (FI, UK, EL, IE, MT, PL)
	Owner can choose whether to point the driver (FI)

5.4.3 Cross-border enforcement

Another relevant issue is the question to what extent violations committed in another country result in demerit points in that country and/or in the driver's own country. As indicated in Table 5.7, several countries also assign demerit point to non-resident drivers. However, even if in theory non-residents are treated equally to residents, there are several practical difficulties, for example with identifying the foreign driver and sending a warning letter. This situation requires common regulations regarding the exchange of data and information about drivers among the national DPS. Chapter 10 deals with this type of issues in more detail. Table 5.7 *Opinions of experts regarding cross-border enforcement*

DPS is not useful for non-residents	AT, UK, DE, EL, HU, IE, LV, MT, PL
It is impossible to monitor non-residents	AT, DE, EL, MT, PL
Drivers from other countries feel exempt from the punishment	AT, HU, PL
Cross border enforcement is difficult and common European legislation is needed	AT, CZ, FI, UK, DE, IE, HU, EL, LV, MT, PL
The exchange of information is needed	AT, CZ, FI, UK, HU, IE, LV, MT

5.5 Specific case evidence: the French DPS

The experience from France demonstrates how the implementation of extensive automatic speed enforcement can substantially improve road safety in a country that already has a DPS. France introduced DPS in 1992 and the implementation of speed cameras began in 2003, when the number of road accident fatalities was 7,655 and speeding was common. The description below is based mainly on information collected in WP1, SUPREME (2007), Carnis et al. (2008), Carnis (2009) and information of the French speed camera system received in a questionnaire survey conducted by VTT in 2011.

In the French DPS drivers have initially 12 points on their account (except for novice drivers who have only 6 points): For speeding offences drivers lose 1 to 6 points depending on the excess speed. Other offences included in the system concern e.g. drink driving, reckless driving, non-use of seat belts. After driving for three years without any offences the lost points are returned to the account (after one year for offences worth one point only). Drivers can also regain points by participating voluntary training courses. Drivers who lose all points have their licence invalidated for six months.

The French automatic speed enforcement system nowadays contains about 2,500 speed cameras, approximately 1,600 fixed and 900 mobile. The system covers 65,000 kilometres of roads all over the country. Fines (fixed amount for speeding less than 50 km/h over the limit) and penalty points are issued if the measured speed exceeds the speed limit by more than 5 km/h. The tickets are sent to the owner of the vehicle and he is responsible for the consequences unless he/she names the driver (in case the owner was not driving). A discount for fixed penalties is granted for swift payment. If the driver denies having committed the offence, a police enquiry follows. In 2008 about 9 million speeding tickets were issued in France, i.e. 138 per thousand inhabitants (ETSC, 2010).

During 2002–2007 the average speed of private cars on French roads decreased by 11.5 km/h on motorways, 11.9 km/h on main roads, and over 15 km/h on secondary roads. At the same time the annual number of road accident fatalities fell by almost 40%; from 7,655 in 2002 to 4,700 in 2007. Roughly 75% of this huge reduction has been attributed to the speed camera system, even though accurate estimates cannot be made.

This French case illustrates that a DPS and high levels of enforcement are inextricably bound up when aiming at substantial road safety effects, but that they cannot be disentangled.

5.6 Sustainability and transferability issues

The long-term effect of DPS on road safety will be seriously threatened unless it is accompanied by sufficient enforcement. Sufficient enforcement makes that users' objective and subjective risk of being punished for traffic offences prevents them from committing them, especially serious ones that are known to influence accident frequency or severity. Because of differences in enforcement levels and targets as well as in road user behaviour, the effects of a DPS in one country cannot be directly transferred to another country, even if the systems are otherwise similar.

Usually, the introduction of a DPS is accompanied by a temporary increase in enforcement as well as extensive publicity. Both aspects are likely to have contributed to the positive effects of a DPS on accidents and road user behaviour which are often reported during the first few months. Maintaining a high level of enforcement and regularly informing the public about issued penalties (withdrawals of driving licences) can help to sustain the positive effects for a longer period. This way road users are regularly reminded that the system is in force and functioning. A swift process in issuing penalty points to drivers' account and in informing drivers of their point situation serve the same purpose (see also Chapter 7 about administrative and organizational issues).

It must be kept in mind that the long term effects of DPS on road safety cannot be measured by issued sanctions, because if the system is effective road users improve their behaviour and commit violations less frequently. The reduction in the number of licence withdrawals can therefore depend on reduced enforcement or improved driver behaviour or both. Better indicators of the effects of DPS on road safety are the number of serious accidents and driver behaviour, especially speeding, drink driving and use of seat belts. Chapter 8 provides more information about evaluating the effects of a DPS.

5.7 Conclusions and recommendations

It has never been studied to what exact extent the level of enforcement determines the effectiveness of a DPS. It seems clear, however, that unless enforcement is at a certain level, DPS cannot be expected to substantially increase road safety in the long run. Even though it is not possible on the grounds of current knowledge to define in quantitative terms how much enforcement is needed for an efficient DPS, it is possible to shed some light on the issue by the following theoretical reasoning:

- Without enforcement, DPS is meaningless and does not change behaviour at all.
- With a low level of enforcement and drivers' expectancy that the enforcement level is high (e.g. directly after introduction of a DPS), DPS will change driver behaviour in the short term, but as soon as drivers realize that the enforcement level is low, the effect will disappear.
- With a moderate level of enforcement and drivers' expectancy that the chance of getting caught is substantial, a DPS will probably have an effect on driver behaviour that is stronger than the effect of enforcement alone, and that may continue over a longer time.
- When the enforcement level is high and drivers expect that the enforcement level is high, a DPS is not likely to have a preventative behaviour effect on top of the effect of enforcement alone, at least if sanctions are substantial. But even then DPS may increase the speed or the number of licence suspensions compared to normal sanctions. Thus with high enforcement a DPS may have little influence on behaviour over and above the influence of enforcement but still have an added value in removing a larger number of supposedly risky drivers from traffic.

The Tables in Section 5.2.2 provide some ideas of what can be considered low, moderate and high levels of enforcement. Regarding drink driving, for example, testing at least 1/3 of drivers annually means high level, and testing less than 1/50 means low level. Regarding speed cameras, one camera per less than 10,000 inhabitants means high level of automatic speed enforcement, less than one camera per more than 100,000 inhabitants means low level.

Regarding enforcement targets, speeding, non-use of seat belts and drink driving are still major contributing factors in serious accidents. Therefore enforcement in these areas still has huge safety potential and a major impact on the effectiveness of DPS in reducing deaths and serious injuries resulting from road accidents.

Regarding enforcement methods, it is advisable to have a DPS that includes violations that have been detected by automatic cameras in addition to those identified by police patrols. This substantially increases the chance of getting caught and mainly applies to speed and red light violations. Enforcement of seat belts is currently largely based on manual observation but automatic camera applications that can increase enforcement capacity are also available. The potential capacity of automatic enforcement is greater when sanctions for minor offences can be attributed to vehicle owner (owner liability) without the need to identify the driver. Results of enforcement in terms of the effects on road user behaviour, issued sanctions, contribution to the functioning of the DPS and the effects on road safety should be

published regularly in order to remind citizens of the importance of complying with rules and consequences of non-compliance.

5.8 References

- Belin, M-Å, Tillgren, P., Vedung, E., Cameron, M., & C. Tingvall (2010). *Speed cameras in Sweden and Victoria, Australia - A case study*. Accident Analysis and Prevention, 42, pp. 2165–2170.
- Carnis, L. (2009). *Automated speed enforcement: What the French experience can teach us*. Road Safety 2020: Smart Solutions, Sustainability, Vision. The Australian College of Road Safety Conference, Perth, Western Australia.
- Carnis, L., Rakotonirainy, A. & Fleiter, J.J. (2008). *Speed enforcement programmes in France and Queensland: First elements for a systematic comparison*. In: Proceedings High risk road users - motivating behaviour change: what works and what doesn't work? National Conference of the Australasian College of Road Safety and the Travelsafe Committee of the Queensland Parliament, Brisbane.
- Costillo-Manzano, J. I., Castro-Nunõ, M. & Pedregal, D.J. (2010). *An econometric analysis of the penalty points system driver's licence in Spain*. Accident analysis and Prevention 42, 1310-1319.
- Crevits, H. (2011). *Increase and effectiveness of speed cameras Belgium 2002-2010, Press communication*. Flemish Ministry for Mobility and Public Works, Tuesday 17 May 2011. <http://www.ministerhildecrevits.be/nlapps/docs/default.asp?id=200>, accessed 27th October 2011.
- Delaney, A., Diamantopoulou, K. & Cameron, M. (2003). *MUARC's speed enforcement research: principles learnt and implications for practice*. MUARC Report No. 200. Monash University Accident Research Centre MUARC, Victoria.
- Elvik, R. (2010). *Nilsson's Power Model connecting speed and road trauma: Applicability by road type and alternative models for urban roads*. Accident Analysis and Prevention 42,1908–1915.
- Elvik, R., Høye, A., Vaa, T., Sørensen, M. (2009). *The handbook of road safety measures, second edition*. Emerald.
- Erke, A. & Elvik, R. (2006). *Effektkatalog av trafiksikkerhetstiltak*. TØI rapport 851/2006.
- Erke, A., Goldenbeld, Ch. & Vaa, T. (2009). *Good practice in the selected key areas: Speeding, drink driving and seat belt wearing: Results from meta-analysis*. Deliverable 9 of the PEPPER project. European Commission, Brussels.
- ETSC (2010). *Road Safety Target in Sight: Making up for lost time*. 4th Road Safety PIN Report. European Transport Safety Council, Brussels
- ETSC (2011). *Traffic Law Enforcement across the EU. Tackling the Three Main Killers on Europe's Roads*. European Transport Safety Council, Brussels
- European Commision (2004). *Commission recommendation of 6 April on enforcement in the field of road safety (2004/345/EC)*.
- SUPREME (2007). *Thematic Report: Enforcement*. Directorate-General for Transport and Energy (TREN), ERuropean Commission, Brussels.

- Farchi, S., Chini, F., Rossi, P.G., Camilloni, L., Borgia, P. & Guasticchi, G. (2007). *Evaluation of the health effects of the new driving penalty point system in the Lazio Region, Italy, 2001-4*. Injury Prevention 13, 60-64.
- Gains, A., Nordstrom, M., Heydecker, B. & Shrewsbury, J. (2005). *The national safety camera programme. Four-year evaluation report*. PA Consulting Group, London.
http://www2.dft.gov.uk/pgr/roadsafety/speedmanagement/nscp/nscp/coll_thenationalsafetycameraprogram/ationalsafetycameraprogr4598.pdf.
- Goldenbeld, C. (2011). *Intensity of speed camera enforcement in a number of European countries*. Unpublished memorandum, October 27th.
- Hussain, O. T. Nayyar, M.S., Brady, F.A., Beirne, J.C., Stassen, L.F.A. (2006). *Speeding and maxillofacial injuries: Impact of the introduction of penalty points for speeding offences (Ireland)*. British Journal of Oral and Maxillofacial Surgery, 44, 15–19.
- ICF Consulting (2003). *Costs-Benefit Analysis of Road Safety Improvements*. London.
- OECD (2006). *Speed Management*.
<http://www.internationaltransportforum.org/Pub/pdf/06Speed.pdf>
- Poli de Figueiredo, L. F., Rasslan, F., Bruscaquin, V., Cruz, R. Rocha e Silva, M. (2001). *Increases in fines and driver licence withdrawal have effectively reduced immediate deaths from trauma on Brazilian roads: first year report on the new traffic code*. Injury, Int. J. Care Injured, 32, 91-94.
- Pulido, J. Lardelli, P., De la Fuente, L., Flores, V.M., Vallejo, F. & Regidor, E. (2010). *Impact of the demerit point system on road traffic accident mortality in Spain*. Journal of Epidemiology and Community Health, 64, 274-276.
- Redelmeier, D.A., Tibshirani, R.J. & Evans, L. (2003). *Traffic-law Enforcement and risk of death from motor-vehicle crashes: case crossover study*. The Lancet 361, 2177-2182
- SafetyNet (2009). *Speed Enforcement*.
http://ec.europa.eu/transport/road_safety/specialist/knowledge/pdf/speed_enforcement.pdf
 f retrieved 11.1.2012..
- SWOV (2009a). *SWOV Fact sheet, Penalties in traffic*.
<http://www.swov.nl/UK/Research/Publicaties/inhoud/factsheets.htm>
- SWOV (2009b). *SWOV Fact sheet. Speed cameras: how they work and what effect they have*. Factsheet, November 2009.
http://www.swov.nl/rapport/Factsheets/UK/FS_Speed_cameras.pdf, accessed October 27th 2011.
- Thomas, L.J. Srinivasan, R, DFecina, L. & Staplin, L. (2008). *Safety effects of automated speed enforcement programs. Critical review of international literature*. In: Transportation Research Record 2078, Transportation Research Board, National Academy of Sciences, Washington, D.C. p. 118-126.
- Turbell, T., Andersson, T., Kullgren, A., Larsson, P., Lundell, B., Lövsund, P., Nilsson, C. and Tingvall, C. (1997). *Optimizing seat belt usage by interlock systems* (VTI särtryck 270). Linköping: Swedish National Road and Transport Research Institute.
- Wilson, C., Willis, C., Hendrikz, J.K. & Bellamy, N. (2006). *Speed enforcement detection devices for preventing road traffic injuries*. In: The Cochrane Database of Systematic Reviews 2006, nr 2, art. CD004607.pub2. DOI: 10.1002/14651858.CD004607.pub2.

- Zambon, F., Fedeli, U., Visentin, C., Marchesan, M., Avossa, F., Brocco, S. & Spolaore, P. (2007). *Evidence-based policy on road safety: the effect of the demerit points system on seat belt use and health outcomes*. Journal of Epidemiology and Community Health, 61, 877-881.
- Zambon, F. Fedeli, U., Milan, G., Brocco, S., Marchesan, M., Cinquetti, S. & Spolaore, P. (2008). *Sustainability of the effects of the demerit points system on seat belt use: A region-wide before and-after observational study in Italy*. Accident Analysis and Prevention, 40, 231-237.

6 Support measures: intermediate and rehabilitation measures

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6.1 Introduction

In some countries the demerit point system (DPS) is supplemented by intermediate and/or rehabilitation measures to act on drivers. Their objective is to alter the drivers' behaviour in order to improve road safety. The target group consists of drivers who committed at least one offence and collected penalty points. Intermediate measures must be distinguished from rehabilitation measures. Both are preventive measures, but:

- *Intermediate measures* aim to improve driving behaviour before driving licence withdrawal or suspension.
- *Rehabilitation measures* aim to enable the driver to regain the driving licence after disqualification as a result of exceeding the penalty point limit.

Intermediate measures can be either voluntary or mandatory; rehabilitation measures are generally mandatory. *Table 6.1* presents an overview of preventive (intermediate and rehabilitation) measures used in European countries with a DPS:

Table 6.1 *Intermediate and rehabilitation measures in European countries*

Preventive measures in European countries	
Intermediate Measures	
Informative letters	AT, FI, FR, DE, LV, LU
Warning letters	AT, FI, FR, DE, EL, HU, LV
Voluntary driver improvement courses	BU, CY, CZ, FR, DE, UK, HU, IT, LU, PL, ES
Mandatory driver improvement courses	AT, FR, DE, LV
Rehabilitation Measures	
Rehabilitation courses	HU, EL, ES, LU
Medical and psychological tests	DE
Theoretical and practical test	PL, LV

Intermediate measures include:

- Informative letters – informing about the amount of penalty points having been collected.
- Warning letters – indicating the consequence of having penalty points and possibility of remedying this situation.
- Voluntary driver improvement courses – addressed to drivers with a certain amount of penalty points, possibly giving them an opportunity to reduce them; their aim is to provide knowledge, to improve skills, or to change attitudes and behaviour; they can be directed at a particular problem, e.g. alcohol.
- Mandatory driver improvement courses – addressed to drivers who exceeded certain limit of penalty points; lack of attendance results in losing driving licence.

Rehabilitation measures and diagnostics (required to regain the licence) include:

- Rehabilitation courses
- Medical and psychological tests
- Theoretical and practical test

This chapter focuses on intermediate measures. It will hardly look at rehabilitation measures.

In this chapter we will:

- Summarise the similarities and differences in the use of intermediate measures between countries, based on information collected in this project.
- Present facts and evidence concerning the effects of intermediate measures on road safety in general, as well as the role of intermediate measures in a DPS.
- Review the considerations and opinions of experts and stakeholders in different countries on DPS related intermediate measures issues, based on interviews.
- Discuss sustainability and transferability issues concerning intermediate measures in relation to DPS.
- Present conclusions and recommendations concerning the role of intermediate measures in DPS.

6.2 Similarities and differences between countries

In order to compare similarities and differences regarding the use of intermediate measures between countries two tables have been created. *Table 6.2* shows similarities and differences among EU countries in their DPS with regards to intermediate measures. The content is based on information in BestPoint Deliverable 1 (Klipp et al., 2012).

Table 6.2 Similarities and differences among EU countries with a DPS with regards to intermediate measures

	Intermediate measures: Similarities and differences							
	Intermediate measures		Mandatory or voluntary participation in a measure	Possibilities to reduce / fill up points			Specific programmes for different offender groups	Criteria for passing / failing a course
	Yes	No		Knowledge	Skills	Attitude / mentality		
AT	X		Mandatory	No	No	No	Cargo securing, Children securing, First aid, Feedback drive, Driver improvement, Road safety	Participate properly
BU	X		Voluntary	N/A	N/A	N/a	N/A	Cover additional training
CY	X		Voluntary	No	No	No	No	N/A
CZ	X		Voluntary	No	Yes	No	No	Attendance, Paying a fee, Passing theoretical and practical part, Final discussion
FR	X		Voluntary (experienced) Mandatory (novice)	Yes	No	Yes	No	Attendance
DE	X		Voluntary (<14 points) Mandatory (>13 points)	Yes	Yes	Yes	Alcohol and drugs, general traffic offences	No official criteria
UK	X		Voluntary	Yes	Yes	Yes	Speeding, Careless driving	Attendance
EL	X		Mandatory	No	No	No	No	As for people without driving licence
HU	X		Voluntary	N/A	No	No	No	N/A
IT	X		Mandatory	Yes	Yes	N/A	N/A	Attendance, Final exam
LV	X		Mandatory	Yes	Yes	Yes	No	8 points: Attend road safety course 12 points: Theoretical and practical exam
LU	X		Voluntary	Yes	Yes	Yes	Alcohol, Drugs, General	Active participation
PL	X		Voluntary	Yes	No	Yes	No	Attendance
ES	X		Voluntary	Yes	Yes	Yes	N/A	Perform activities, Questionnaire
DK, FI, IE, MT, NL, RO, SL		X	-	-	-	-	-	-

N/A: Information not available.

- : Not relevant for the country.

Most DPS countries (14 out of 21 countries) apply intermediate measures. Seven out of 21 countries have a DPS without intermediate measures. In four of the 14 countries with intermediate measures, these measures are mandatory, in eight they are voluntary, and in two they are both mandatory and voluntary, depending on the number of points or on whether the offender is a novice or experienced driver.

In nine of the 14 countries with intermediate measures it is possible to reduce / fill up points when fulfilling the criteria for passing a driver improvement course or a similar programme aiming at improving knowledge, skills, and/or attitude/mentality. Three countries do not have an opportunity to reduce or fill up the number of points. In two countries information is insufficient to conclude yes or no in this respect.

Four of the 14 countries have specific programmes for different offender groups. In particular Austria has developed a system of specific programmes for different offender groups with six different subjects of the courses. Other countries have specific programmes focusing on alcohol, drugs, speeding and careless driving. Criteria for passing or failing an intermediate measure vary from no criteria at all, to attendance, to passing theoretical and practical exams.

6.3 Facts and evidence

6.3.1 Effects of intermediate measures on road safety

To assess the effectiveness, it is necessary to find answers to the following questions:

- What percentage of all drivers enters the intermediate measures system?
- Has this been changing over the years?
- How do drivers react to information/warning letters?
- What percentage of drivers takes part in the obligatory/voluntary driver improvement courses?
- What percentage of drivers takes part in the obligatory/voluntary driver improvement courses more than once?
- What percentage of drivers that took part in the courses did lose their driving licence later on?
- Do drivers change their behaviour after intermediate measures have been taken?

Answers to the first two questions allow us to estimate the range of the problem and its changes. These data must be linked to the general data on the trends in crash rate. With answers to the next four questions we can determine the effectiveness of the intermediate measures system. Nevertheless, it is very important to control for other factors influencing this type of data like the enforcement level.

At the same time the correspondence between the crash rate and the subject of the intermediate measure should be monitored. There should be systematic and long-term studies conducted in order to evaluate the intermediate measures with the use of common methodology. Only results of such studies can be reliable and authoritative and they can prove the effectiveness or ineffectiveness of the intermediate measures.

There are several evaluation studies which assessed the effects of intermediate measures or in general of educational/rehabilitation measures. Most exhaustively, these are presented in the SUPREME Thematic Report on Rehabilitation and Diagnostic (SUPREME, 2007). This report presented and discussed different types of intermediate measures, including informative letters, warning letters, and voluntary and mandatory driver improvement courses as well as rehabilitation courses. The results of the evaluation studies are very

heterogeneous. For example, Wells-Parker et al. (1995) and Masten & Peck (2004) conclude, respectively, that the crash rate and recidivism is 7% to 9% and 6% to 8% lower for those who took a rehabilitation course. Ker et al. (2006) and Struckman-Johnson et al. (1989) did not find an effect on the crash rate.

More recently, also based on meta-analysis, Elvik et al. (2009) report that driver improvement courses result in 11% less accidents (all kinds) with a 95% confidence interval between minus 22% and plus 1%. However, as these researchers remark, driver improvement courses are often voluntary; therefore, course participants may be very different from drivers who do not participate and the reported effect may be (partly) the result of these differences. Elvik and colleagues also looked at the effect of warning letters, and, again based on meta-analysis, they report a decrease of accidents of 10% with a 95% confidence interval between minus 14% and minus 6%).

6.3.2 *Effects of intermediate measures on the effectiveness of DPS*

The effectiveness of intermediate measures can be defined by their influence on the drivers' behaviour, in such a way that they do not receive additional penalty points and their driving licence is not withdrawn.

According to the findings from the EU Project ANDREA (Bartl et al., 2002), rehabilitation and driver improvement courses should be oriented towards a specific target group. In accordance with this recommendation, we distinguished several target groups when analysing the literature. Although target groups can be defined in many ways, the following division seemed to best to reflect the reviewed literature:

- First-time drink and drive offenders,
- Second-time drink and drive offenders,
- Alcohol and drug offenders with stated addiction, other personality disorders,
- Novice drivers during probation period,
- Drivers with serious/multiple traffic violations (i.e. speeding, red light violation, etc.).

Several evaluation studies reported substantial effects of intermediate measures. For example, Michalke et al. (1987) found that traditional rehabilitation courses aimed at drink-driving offenders achieved a 50% reduction in recidivism rates. A long-term rehabilitation model, individually adapted to drivers who are problem drinkers on the basis of a therapeutic process with individual therapeutic goals can even be more effective. According to Himmelreich (1998), 93.6% of people completing such an individual long-term treatment did not reoffend with drink driving in the five years after regaining the driving licence. Also driver improvement courses for novice drivers, evaluated by Jacobshagen (1998) were found to be effective in reducing the recidivism rate.

The European project ANDREA collected many studies on courses for drink-driving offenders and their effect on recidivism. Not all courses had an effect on recidivism, but some had substantial effects (Bartl et al., 2002). *Table 6.3* shows a summary of the courses that approach, what Bartl and colleagues called, the *magical 50%* reduction in recidivism (i.e. the difference between treatment and control group).

Table 6.3 *Results of evaluation studies of the effect of driver improvement/rehabilitation courses on recidivism (Source: Bartl et al., 2002)*

Country	Study	Observation period	Recidivism rate of:		Reduction of recidivism
			Course participants ****	Control group	
Austria	Michalke et al. (1987)	2¼ years	A 15.8% B1 12.5% B2 10.3%	30.6%	A 48.4% B1 59.2% B3 66.3%
Austria	Schützenhöfer & Krainz (1999)	3 years	22.7%	40.4%	43.8%
Germany	Winkler et al. (1988)	3 years	IFT 13.5% IRAK 12.8% LEER 14.0%	(17.7%) (18.6%) (18.3%)	no comparison*
Germany	Winkler et al. (1990)	5 years	IFT 19.6% IRAK 20.5% LEER 22.9%	(25.7%) (24.6%) (26.3%)	no comparison*
Germany	Jacobshagen (1997)	3 years	14.4%	31.6%	54.4%
Switzerland	Mahey et al. (1997)	5-6 years	19.7%	19.7%	0**
United Kingdom	Davies et al. (1999)	3 years	3.4%	9.6%	after correction 54%***
USA	Jones et al. (1997)	1 year	5.6%	10.7%	47.7%

* It was not a control group but a baseline group of clients diagnosed positively.

** The programme analysed was essentially different to the other programmes evaluated.

*** Reduction after correction in a mathematical model weighting the influence of self-selection bias.

**** The letters refer to different focus of the courses

As indicated, the courses listed above all focused on drink-driving offenders only. These most effective courses had certain factors in common:

- The size of the groups was about 10 participants at the most.
- Courses were running over a period of several weeks (3-8 weeks).
- Courses consisted of several sessions (about 3 to 6 and per session 2 to 3 hours each).
- Courses were led by professionals who were sufficiently educated to discuss with problematic clients about problematic personal aspects and were able to set up a professional working relationship.
- The content of the courses was rather personal self-reflection than teaching and there was no fixed courses scheme but interventions were client centered/oriented.

In contrast to these courses the course model from Switzerland which did not indicate a reduction in recidivism was held with 20 participants, was focusing on teaching, was led by experts in their field (e.g. law, medicine), but not experts in leading problematic groups and was rather short term.

Although in general, these results are promising we should remember that the majority of studies on recidivism are methodologically weak as it is very difficult to organize a comparable control group and to keep a constant level of enforcement. Therefore, a final conclusion is still lacking. Nevertheless, based on the results of the BestPoint literature review we can point out several elements which may enhance the effect of driver improvement and driver rehabilitation courses.

- Courses must be oriented towards the specific target group; only in this way it is possible to allocate the correct measure properly.
- The larger the problem (i.e. alcohol and drug offenders with stated addiction, other serious personality disorders), the more intensive and individually oriented the rehabilitation programme has to be.
- The knowledge, skills and commitment of the instructors are key issues for the effectiveness of the courses.

- Conclusions regarding the length of an intervention are contradictory, but serious problems probably require a longer – several weeks – period of treatment.

6.4 Considerations and opinions among the countries and organisations

As indicated the scientific evidence is promising, but limited. Therefore, it makes sense to look as well at the considerations and opinions about intermediate measures of experts in the different DPS countries. *Table 6.4* shows an overview of the EU DPS countries and the expert considerations and opinions about intermediate measures. The content of this Table is based on the information in BestPoint Deliverable 1 (Klipp et al., 2011). When “X” is used in the tables, it means that experts in that country have explicitly expressed the statement mentioned. When cells are blank, it means that the experts did not express that statement or even expressed to disagree with it.

First of all, it can be concluded that the considerations and opinions of the experts in the different countries are very diverse. It is important to keep in mind that the opinions and considerations reflect different DPSs. Nevertheless, it is possible to identify some common opinions. Most experts consider intermediate measures and rehabilitation courses to be a good idea simply because it intuitively seems reasonable. Only a few experts consider intermediate measures and rehabilitation programmes not a good idea because of lacking or doubtful effects. Finally, some experts consider rehabilitation programmes not a good idea because of other reasons, including discrimination towards less well-off drivers, commercial matters, and because they are considered to support recidivism. Some experts believe that the possibility to regulate number of points by participating in a course will imply that drivers are less likely to adjust their behaviour in order to avoid points.

In most countries the experts state that participation in rehabilitation/intermediate courses should be both voluntary and mandatory. Only in Finland and Italy the experts state that there should be no intermediate/rehabilitation courses and thus no mode of participation at all.

When it comes to possibilities to reduce or fill up points by participating in courses that focus on knowledge or skills, an equal number of countries consider this positively and negatively. Most countries though, consider it important to make it possible to reduce or fill up points by participating in courses that aim at improving attitude. The majority of experts express the view that specific programmes for specific offender groups are a good idea. Finland agrees with that, but calls for evidence. Regarding specific programmes for different offender groups, experts in Greece and Latvia consider it to be adding bureaucracy. Experts in Germany state that it is practically difficult (e.g. not enough offenders in local areas to form specific groups).

Regarding criteria for passing or failing a course, opinions vary a lot from considering participation to be sufficient, to an evaluation by the trainer, or having an examination based on reliable criteria.

Table 6.4 Overview of experts' considerations and opinions about intermediate measures in EU countries with a DPS

	Intermediate measures: Considerations and opinions																	
	Driver improvement courses			Mode of participation in a measure			Possibilities to reduce / fill up penalty points						Specific programs for different offender groups			Criteria for passing / failing a course		
	Seems like / thought to be a good idea	A good idea because of the known positive effects	Not a good idea because of doubtful / lacking effects	Should be voluntary	Should be mandatory	None	Knowledge		Skills		Attitude / mentality		Seems like a good idea	Seems like a good idea, but evidence is needed	No, practically difficult a/o adds bureaucracy	Participation is enough	Evaluation by the trainer	Examination. Reliable criteria should be defined
							Positive	Negative	Positive	Negative	Positive	Negative						
Austria	X			X	X		X		X		X		X					X
Cyprus	?	?	?	X	X		?	?	?	?	?	?	?	?	?	?	?	?
Czech Republic	X		X		X		X	X	X	X	X	X	X					X
Finland			X			X		X		X		X		X				X
France	?	?	?	?	?	?	?	?	N/A	N/A	X		?	?	?		X	
Germany	X			X				X	X		X		X		X		X	
Great Britain	X			?	X		X		X		X		X			?	?	?
Greece	X			X	X		X	X	X	X	X	X	X		X	X	X	
Hungary	X			X	N/A			X		X	X		X			N/A	N/A	N/A
Ireland		X			X		X		X		?	?	X			N/A	N/A	N/A
Italy			X			X	N/A	N/A		X	X		N/A	N/A	N/A			X
Latvia	X				X		X		X		X				X	X		
Luxembourg	X			X	N/A		X			X	X		X			N/A	N/A	N/A
Malta	X			X	X		X		X		X		X			X		
Poland			X	X	X		?	?	?	?	X		X					X
Romania				N/A	N/A	N/A		X		X		X	N/A	N/A	N/A	N/A	N/A	N/A
Spain	X			X	X		X		X		X		N/A	N/A	N/A		X	
Bulgaria, Denmark, Netherlands, Slovenia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

?: Not possible to conclude from information available. N/A No information available. X: Confirmatory answer. Blank: Non confirmatory answer.

6.5 Sustainability and transferability issues

The analysis of DPS systems regarding intermediate and rehabilitation measures indicates large differences between individual countries. The opinions of national experts on the individual solutions also vary. No country is conducting systematic evaluations of the effectiveness of intermediate or rehabilitation courses. The studies that have been carried out sometimes found positive effects and sometimes no effect. So, there is no unequivocal evidence that these types of courses are effective. Consequently, there is no hard evidence to point out those approaches that ensure and maintain long-term effects.

However, the evaluation studies reviewed in the SUPREME and ANDREA projects as well as the opinions of experts point to three important consecutive steps:

- Step 1: Sending a warning or informative letter. Sending a letter is a preventive measure to make the driver aware of the fact that he/she has certain number of points collected as well as pointing out its consequences. These letters aim to influence the driver's behaviour on the road, since the driver wants to avoid receiving additional points.
- Step 2: Offering a driver improvement course. These courses are designed for drivers who have committed at least one violation and have collected a certain number of points. They aim to influence behaviour and attitudes and provide drivers with appropriate knowledge and skills. Driver improvement courses can be obligatory or voluntary. These courses may allow reduction of points or in some extreme cases they may protect from license withdrawal.
- Step 3: Withdrawing the licence. Licence withdrawal is the final act when despite warning letters as well as participating in a driver improvement course the maximum point level has been reached.

During the first two steps, different intermediate measures are applied whereas the third step includes license withdrawal. These steps can be introduced relatively easy in all countries. In fact, at present, the majority of DPS countries already have a similar approach, although the details differ.

The majority of experts expressed the view that it is best to have specific courses for specific offender groups. Groups that at least have to be distinguished are drivers under the influence of alcohol or drugs, and excessive speeders. The experts also indicated the usefulness of specific courses for young offenders. Several countries already apply such specific courses.

Given the expert opinions as well as practices applied in the majority of the countries the proposed three steps for the intermediate measures seems to be widely acceptable. Therefore, the transfer of the approach between the countries is likely to be easy. On the other hand there may be some difficulties in implementing the approach as well, related to finance and administration. If the three-steps approach is to be efficient it is essential to guarantee fast responses (e.g. a warning letter should reach the driver immediately after the offence) and a high quality of the courses (with standardised programmes, qualified trainers, and specialist schools). This, in turn, requires adequate financing. If the courses become too expensive, this may result in too low (voluntary) attendance. In general, offenders should pay for themselves the costs of the driver improvement courses, with perhaps some financial compensation for drivers in the lowest income categories.

6.6 Main conclusions and recommendations

Based on the DPS review and the experts' opinions we can draw the following conclusions:

- 14 out of the 21 countries with a DPS apply intermediate measures;
- It is relevant to distinguish between: intermediate measures (to prevent the driver from re-offending while the driver still has his driving licence) and rehabilitation measures (to prevent the driver from re-offending after the driver regains his driving license)
- Countries use different measures
- Scientific proof of the effects of intermediate and rehabilitation measures is inconclusive and opinions about their effectiveness are unanimous.

Nevertheless, based on what is known and on theoretical considerations, it is recommended to:

- Implement intermediate and rehabilitation measures encompassing four main consecutive steps:
 - Sending warning/informative letters;
 - Offering driver improvement course;
 - Withdrawing the licence;
 - Rehabilitation measures before reinstatement of the licence.
- Focus driver improvement courses on specific types of offenders (e.g. drink-drivers, excessive speeders, young driver) to ensure an approach that is tailored to the specific problems.
- Realize that the larger the behavioural problem that causes risky behaviour, the more intensively and individually oriented the intermediate measure should be.
- Ensure high quality instructors, since intermediate and rehabilitation courses largely depend on the knowledge, skills and commitment of the instructors.
- Realize that driver improvement and rehabilitation courses for serious offenders require longer (several weeks) treatment.
- Ensure that driver improvement courses focus on changing attitudes and behaviour, rather than on providing knowledge and skills.

And, last but certainly not least, it is recommended to conduct systematic and long-term well-designed evaluation studies to assess the effects of intermediate and rehabilitation measures on knowledge, attitudes and behaviour. Subsequently, the results of evaluations in individual countries can be subject to a joint, larger-scale analysis. Only results of such scientific studies will allow for reliable, objective and authoritative conclusions about the effectiveness of intermediate and rehabilitation measures, and identify the most essential elements, characteristics and conditions.

6.7 References

- Bartl, G., Assailly, J.-P., Chatenet, F., Hatakka, M., Keskinen, E., & Willmes-Lenz, G. (2002). *EU project "Andrea": Analysis of driver rehabilitation programmes*. Wien: Kuratorium für Verkehrssicherheit KfV.
- Elvik, R., Høy, A., Vaa, T. & Sørensen, M. (eds.) (2009) *The handbook of road safety measures* [2nd edition]. Bingley, Emerald Group.
- Fylan, F., Stradling, S. (2010). *University comparison of driver alertness and the national Driver Improvement Scheme*. The Association of Chief Police Officers of England, Wales and Northern Ireland. Brainbox Research.
- Himmelreich, A. (1998). *Verkehrstherapie – kurz oder lang?* In: K. Himmelreich (Ed.). *Jahrbuch Verkehrsrecht 1998*. Düsseldorf: Werner-Verlag. p.175-217.

- Jacobshagen, W. (1998). *Nachschulungskurse für alkoholauffällige Fahranfänger nach dem Modell NAFA in Deutschland: Klientel, Kursdurchführung, Wirksamkeit und Akzeptanz*. In: Bundesanstalt für Straßenwesen BASt (Ed.), *Driver Improvement 6: Internationaler Workshop* (Heft M 93). Bergisch Gladbach: Editor. p.261-274.
- Ker, K., Roberts, I., Collier T., Beyer, F., Bunn, F. & Frost, C. (2006). *Post-licence driver educations for the prevention of road traffic crashes*. Cochrane Collaboration.
- Klipp et al. (2011) *European Demerit Point Systems: Overview of their main features and expert opinions*. BestPoint Deliverable 1. Project No. MOVE/SUB/2010/D3/300-1/S12.569987-BestPoint. BASt, Bergisch Gladbach.
- Masten S. V. & Peck, R. C. (2004). *Problem driver mediation: A meta-analysis of the driver improvement literature*. Journal of safety research, 35, p. 403-425.
- Michalke, H., Barglik-Chory, Ch. & Brandstätter, Ch. (1987). *Driver-Improvement – Effizienzkontrolle von Gruppentrainingsmassnahmen für alkoholauffällige Kraftfahrer*. Wien: Kuratorium für Verkehrssicherheit KfV, Institut für Verkehrspsychologie.
- Struckman-Johnson, D. L., Lund, A. K., Williams, A. F. & Osborne, D. W. (1989). *Comparative effects of driver improvement programs on crashes and violations*. Accident Analysis and Prevention, 21, p.203-215.
- Wells-Parker, E., Bangert-Drowns, R., McMillen, R. & Williams, M. (1995). *Final results from a meta-analysis of remedial interventions with drink/drive offenders*. Addiction, 90, p.907-926.
- SUPREME (2007). *SUMmary and Publication of Best Practices in Road Safety in the EU-MEMBER States plus Switzerland and Norway. Thematic report: Rehabilitation and diagnostics*. Directorate-General for Transport and Energy (TREN), European Commission, Brussels.

7 Support measures: administration and monitoring

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7.1 Introduction

A DPS has to be supported by administration to keep track of offender records and offender measures. On the one hand, administration is needed to make the enforcement machinery work in practice; on the other hand, administration also collects data that could be used to review or evaluate how the system works. Administration stands as a generic term and encompasses all authorities which perform and manage the DPS in a country. It ensures the implementation and operation of decisions according to the DPS and can be considered as the universal process of organizing people and actions towards the objective of the DPS.

Administration is a cost-intensive part of a DPS as staff is needed to transfer the, in most cases, virtual points into real actions. Three core issues need to be carried out concerning the administration of a DPS:

1. Keeping the register, including the collection and calculation of points;
2. Enforcing measures according to the DPS, including the information of offenders, sending warning letters and the withdrawal of driving licences;
3. Monitoring and providing statistics.

Hence, this chapter addresses the following topics:

- How is the administration of DPS organized?
- Which institutions are involved in the administration of DPS?
- How are the ways of processing information between the involved institutions?
- How and when are offenders informed about receiving points or their point status?
- How can or should administration statistics be used to improve road safety?

7.2 Similarities and differences

Based on the inventory in the first part of BestPoint (Klipp et al., 2011) it can be concluded that there are both similarities and differences between the DPS administrations in different countries, e.g. related to:

- Institutions involved in the administration and DPS enforcement;
- Central vs. regional registers;
- Amount of institutions involved;
- Ways and time periods of processing information: police => administrative body => driver;
- Procedure of pointing: automatic vs. decisive procedure;
- Amount of staff / ratio of staff and licence holders, costs
- Ways and time periods of monitoring in the different institutions, statistics

Several organizations can be responsible for the administration of a DPS, e.g. a dedicated body, the police or a ministry. Administration, enforcement and collecting points is sometimes a task of the police only, sometimes these tasks are divided between the court or the ministry of transport, and local authorities. *Table 7.1* provides an overview of the current practice in the various DPS countries. The most common administrative structure is as follows: the points are registered in a central register, often located at the Ministry of Transport, and local authorities are responsible for enforcing the measures according to the DPS when specific point thresholds are reached.

Table 7.1 *Information about the institutions involved in the administration of DPS in the DPS countries (Source: Klipp et al., 2011)*

Countries where the administration of the DPS, the points collection and the enforcement of measures according to the DPS are carried out by only <u>one institution</u>	<ul style="list-style-type: none"> • Cyprus, Denmark, Poland, Romania (Police) • France (Ministry of police, overseas, territories and immigration) • Great Britain (Driver and Vehicle Licensing Agency) • Latvia (Road Traffic Safety Department, RTSD) • Netherlands (Public Prosecution Service) • Spain (Ministry of Interior, Directorate General for Traffic)
Countries where the administration of the DPS and the points collection is <u>centralised by one institution</u> and the enforcement of measures according to the DPS is carried out by <u>local authorities</u>	<ul style="list-style-type: none"> • Austria (Ministry of Transport + authority of the offender's place of residence) • Czech Republic (Ministry of Transport + 205 authorized municipalities) • Finland Finnish (Transport Safety Agency Trafi + Police) • Germany (Federal Motor Transport Authority + all local driving licence authorities) • Greece (Ministry of Transport and Communication + Police) • Italy (Ministry of Infrastructure and Transport + Police) • Malta (Transport Malta + Police and the Local Wardens)
Countries where <u>three or more institutions</u> are involved in the administration of DPS, points collection and enforcement of measures	<ul style="list-style-type: none"> • Ireland (Road Safety Authority + Department of Transport + the Garda)

The procedure of pointing often works as an automatic process: after an offence, the points are automatically transferred to the register. In most cases, the local offices that are responsible for collecting the fines are directly linked and have access to the central register. Thus they can type in the points directly into the register. In most countries, court decisions are only necessary in cases of criminal offences or if the driver appeals.

The time it takes between the detection of an offence, the registration of the points, and informing the offender about the points varies not only from country to country, but also within a country, depending on how the offence was detected (automatic camera or police), the staff, and the seriousness of the offence. On average, it takes about one to two months. In some countries, the offender is directly informed about pointing when he is caught on the spot. If this is not the case, he receives the information by the penalty notice. The offender is typically informed about his number of points when a specific point threshold is reached. Besides, the offender can usually get this information on request. It is often available at local police departments or other local authorities. Some countries provide internet services so that the information is available by an online system. Only in one country the points are physically written on the driving licence.

There is not much information available on the number of people working on the administration on DPS. This depends on the number of institutions involved, the level of automation and the amount of licence holders in one country. Depending on the institution, the employees may not only work for the DPS, but may have other tasks as well.

Differences also exist in ways and time periods of monitoring the procedures in the different institutions. Measures to supervise, maintain and optimize the DPS are hardly ever taken. Some countries have internal supervision procedures or do daily statistics as a measure of quality assurance in order to detect errors in the procedures. Some countries calculate statistics on a monthly base, but many more countries do annual statistics about at least the most common offences.

7.3 Facts and evidence

There is a lack of research concerning the effectiveness of different administrative DPS procedures, the amount of staff involved and the costs. However, there may be some issues which can be cleared just by common sense.

A register must assure that each record about each single offender comes together in order to calculate the point status of that person and to identify repeat offenders. The fewer the amount of institutions involved in the administration of a DPS, the shorter are the ways of processing information. Automatic procedures may reduce the amount of staff necessary to administrate a DPS, but they must assure that information about each offence is processed in the right way. Regular statistics may provide information about the functioning of the DPS and about errors in the administration. Statistics may also serve as an evaluation tool for road safety measures, e.g. changes in traffic regulations (see the example in *Section 7.5.3*).

7.4 Considerations and opinions

When looking at the considerations and opinions of the experts in the various countries, a central register is generally favoured. The advantage of just one institution involved is clearly that the ways of processing the information about offences and offenders are short. The involvement of two institutional bodies also still seems reasonable, if a direct information exchange is assured and efficiently organised.

Some experts mention that improvements are possible in the transparency of how offenders are informed about gaining points for an offence and their point status or how offenders may gain insight into their record. Too much time between an offence and the information to the offender about pointing may reduce the corrective effect of the DPS. This may also occur when offenders do not have easy access to the information on how many points they have acquired.

When different offences lead to a different number of points, the calculation of points may lead to high administrative burden in some countries (see example in *Section 7.5.1*). The other option, as applied in some other countries (e.g. Austria, Denmark and Finland), is to simply count the number of offences. This could reduce the administrative burden and may even be more effective as research has shown that the amount of offences is a better predictor for accident risk than the amount of points (Diamantopoulou et al., 1997; Schade, 2005).

Regular statistics may increase the administrative burden of a DPS, but are a necessary tool for optimizing the DPS and related road safety strategies. If no statistics were available, the effect of the DPS would not be measurable.

7.5 Specific case evidence: administration and monitoring in Germany

This section presents an example of the administration and monitoring procedures in Germany. The example was selected because Germany has a long-standing history of registering offenders and offences. Already in 1910 a central collecting body for notifications about drivers of motor vehicles was established in Berlin. This register contained only information about withdrawals and refusals of applications for driving licences. In 1951 the German Federal Motor Transport Authority (KBA, Kraftfahrt-Bundesamt) was established by law and took over the tasks of the former collecting body. Since then, the “owners” of points and the fined offences have been registered here. The Federal Motor Transport Authority (FMTA) receives notifications from the following authorities:

- from courts about criminal and administrative offences in road traffic;
- from civil penalty bodies in case of offences which lead to fines over 40 € and, therefore, result in points;
- from local driving licensing authorities if driving licences are rejected or withdrawn or if measures are taken according to the DPS or according to the regulations of the driving licence on probation.

7.5.1 Administration and the ways of processing information

In Germany, the FMTA together with all local driving licence authorities, is responsible for the administration and enforcement of the DPS. The procedures are as follows.

When a driver breaks a road traffic rule, the civil penalty body of the region where the offence was committed is responsible for claiming the fine, provided that the offence was an administrative and not a criminal offence. Generally, together with the penalty notice, the offender is informed about the amount of points related to the offence although this information is not mandatory and non-binding. If the offence is a point offence (according to §28 of the German Road Traffic Law) and the offender does not appeal⁵, the regional civil penalty body automatically and electronically transfers the offence to the FMTA. Three months after the day of the offence, 80% of the administrative offence notifications have been sent to the FMTA. In case of criminal offences and other court decisions, the court is responsible for this procedure. Court decisions are also transferred electronically to the FMTA, but in contrast to administrative decisions, the electronic notice is changed to a paper notice as the courts' software programmes and the software for the Central Register are incompatible. The file is then kept as paper record.

At the FMTA the points are assigned to the offender's electronic record in the Central Register for Traffic Offenders. The allocation of the offence to the right offender functions via different programmes; the date and place of birth is checked and also the name at birth. In case of doubts about the right allocation, a staff member needs to do the allocation "by hand". Around 70% of all notifications are registered automatically in an electronic register and around 30% are registered in a paper register.

When a notification about an offence reaches the Central Register for Traffic Offenders, it is checked whether the offender is already in the electronic register. If this is the case, the computer calculates the total amount of points, and if one of the three intervention levels is reached (8, 13 or the maximum of 18 points), the computer automatically informs the local driving licence authority which is responsible for enforcing the DPS measures. When an offender is not yet registered electronically, but only in the paper register, a staff member of the FMTA calculates the points and generates the information for the local driving licence authority.

The actual and legally binding procedure of assigning points takes place in the local driving licence authorities. First the local authority verifies the calculation of the FMTA and if it is confirmed that an offender reached one of the intervention levels, the local authority will act. If the offender reached 8 points, it will send out a warning letter. If the offender reached 13 points, it will send out a letter with the order to participate in a driver improvement course. If the offender reached 18 points, the local authority will send out a letter with the order to visit the local authority and hand over the driving licence. Since these interventions have to be recorded in the Central Register of Traffic Offenders, the local authorities transfer their decision to the FMTA where the recording procedure takes place as described.

⁵ If the offender appeals, the case is referred to court.

To sum up, the Central Register of Traffic Offenders and the regional registers of the local authorities exist in parallel which leads to double-entry-booking. However, the local authorities have more comprehensive data of residents within their jurisdiction. In addition to the notifications from the Central Register, the locally stored data also contain information about the driver's licence, assessments and notifications from the police or the Federal Central Criminal Register. Storing all these data in the Central Register would require an extensive expansion of the database. Storing all data only locally would again require a very complex data network between all the local authorities. Hence, the combination of a Central Register which triggers action of local authorities only when needed is seen to be very efficient.

A source of potential errors in the administrative procedure can be found in the complex calculation of real points by the local authorities. One element that makes it complex is the bonus system that allows offenders to reduce the number of points by participating voluntarily in a driver improvement course. If the offender does so before he reaches nine points, four points are deducted, and if he does so with 9 to 13 points, two points are deducted. To implement this, the local authority has to check each single offence to see when the decision about it became legally binding and when the participation in the course was completed successfully. This complex calculation procedure could be overcome by two main changes. At first, if there was no bonus system, the calculation of points would be easier. At second, if there were no points, but just a counting of the offences like, for example, in Finland, Denmark and Austria, a complex calculation procedure would disappear. However, these administrative advantages have to be weighed against the potentially negative consequences for the effectiveness of the DPS as a whole.

Another disadvantage of the German DPS administrative system is that there are no regulations about informing the offender about the points they got for an offence. Hence, most offenders do not know their current amount of points. A driver can ask the FMTA, but the information he gets from there about the point status is non-binding (no guarantee) as the real amount of points is calculated in the local driving licence authority.

7.5.2 Staff and costs

Currently, about 180 employees work at the Central Register of Traffic Offenders at the FMTA. Since many of them work part-time, this equals about 100 full-time units. Procedures, however, are increasingly automated. In addition, in every local driving licence authority there is at least one person responsible for administrative procedures concerning the DPS. In Germany there are about 650 of such local authorities. The costs of staff to run the German DPS are unknown as are the operating expenses and computing costs, so the total costs are difficult to estimate. However, in view of estimated 50 million licence holders in Germany, costs are seen to be adequate by German experts (see Klipp et al., 2011).

7.5.3 Monitoring and statistics

The FMTA provides everyday work statistics for internal use; annually, it also provides official statistics. Everyday work statistics are generated for the purpose of detecting errors and carrying out quality control of the data handling processes. If there is e.g. a large variation in the number of notifications, this would lead to an error note and trigger the search and identification of the problem.

The official annual statistics serve road safety. It is a picture of the typical offending behaviour of the driving society. The statistical information triggers political decisions and may assess changes in road traffic regulations. For example, these statistics served as an

evaluation tool for the introduction of the zero alcohol limit for novice and young drivers and also for the introduction of the accompanied driving in Germany. In general it can be recommended that any political decisions about changes in DPS are informed by a thorough analysis of monitoring statistics in order to have a good comprehension of possible positive and negative implications of changes to the system.

The basic annual statistics consist of information about the number of new notifications in a particular year and the types of offences/offence area (see *Table 7.2* for the 2010 example).

Table 7.2 Entries of offences in 2010 related to area and offence types in Germany (amount in 1.000, projected)

Federal State of the notifying authority	Alcohol and other drugs	Hit-and-run offences	Right-of-way violations	Driving while suspended	Speeding	In comparison: Total ^{*)}
Baden-Württemberg	24	5	65	22	339	570
Bavaria	33	4	42	13	322	675
Berlin	5	2	39	3	31	136
Brandenburg	7	1	8	3	189	239
Bremen	1	0	8	1	26	49
Hamburg	2	1	15	1	40	80
Hesse	13	4	20	7	340	428
Mecklenburg-Western Pomerania	5	1	7	1	69	106
Lower Saxony	15	3	40	8	389	549
North Rhine Westphalia	30	7	80	19	622	1.071
Rhineland-Palatinate	11	3	9	12	85	168
Saarland	2	0	3	1	26	42
Saxony	11	2	33	5	88	169
Saxony-Anhalt	6	1	5	2	58	88
Schleswig Holstein	5	1	8	5	78	119
Thuringia	5	1	6	2	129	167
Total ^{*)}	175	36	389	104	2.831	4.656

^{*)} notifications without information about the Federal State included

Note: Per each offence, up to five offences can be indicated. Hence, the table contains multiple enumerations.
(Source: http://www.kba.de/cln_030/nn_125380/DE/Statistik/Kraftfahrer/Verkehrsauffaelligkeiten/ZugangVZR/2010_vzr_z_dusl_delikte_absolut.html)

The annual statistics also give information about the number of registered persons: total amount, amount of persons with certain point states, gender, age, etc. (see *Table 7.3* for the 2010 example). Detailed analyses of specified samples can be carried out on this basis. Hence, these statistics are a good evaluation tool to measure all activities related to road safety. In addition, specific high-risk-groups may be identified.

Table 7.3: *Persons exceeding points thresholds through notifications in 2010 in Germany by gender and age*) (amount in 1.000, projected)*

Gender and age (in years)	One-point- threshold	Eight-points-threshold (warning letter)	14-points-threshold (driver improvement course order)	18-points-threshold (driving licence withdrawal)
Males ≤24	245	18	3	1
Males 25-44	930	88	17	5
Males 45-64	782	54	9	2
Males ≥65	206	7	1	0
Added**	2,162	166	30	9
Females ≤24	103	2	0	0
Females 25-44	387	11	2	0
Females 45-64	249	6	1	0
Females ≥65	48	1	0	-
Added **	788	20	2	0
Total***	2,950	187	33	9

) multiple threshold exceeds per person are possible

**) persons without information about age included

****) persons without information about age and gender included

(Source: http://www.kba.de/clin_030/nn_125380/DE/Statistik/Kraftfahrer/Verkehrsauffaelligkeiten/ZugangVZR/2010__vzr__z__punkteschwellen.html)

The annual business statistics relate to the business activities within the register. It comprises the amount of persons registered as well as new entries and deletions, the amount of new notifications and additional information supplied on request (see the example in

Table 7.4). By time series, the development of number of accidents and different types of offences over the years can be analyzed.

As a special service, the FMTA provides for tailor-made statistics, e.g. the amount of traffic light violations. These can be ordered via their website at a charge.

For research purposes, the statistics department of the FMTA keeps a statistics database in which all notifications related to a certain register entry are saved under its unique number without personal information. The data in this research database will never be deleted and will always be available.

Table 7.4 *Notifications to the German Central Register in the years 2004-2010 by type of decision and deciding authority*

Type of decision and deciding authority	2004	2005	2006	2007	2008	2009	2010
Court decisions	327,659	317,661	295,044	284,883	281,507	263,690	248,316
Fine decisions by courts	55,422	59,054	60,423	57,510	55,820	53,339	62,734
Preliminary withdrawals, confiscations and cancellations of driving licences by courts	115,639	110,990	104,190	98,946	96,430	87,064	83,274
Fine decisions by civil penalty bodies	3,874,601	4,226,020	4,109,956	4,262,133	4,256,355	4,310,583	4,221,681
Driving licence related decisions and measures by licensing authorities	674,256	693,775	686,251	685,805	693,853	678,304	671,005
Total	5,047,577	5,407,500	5,255,864	5,389,277	5,383,965	5,392,980	5,287,010

(Source: http://www.kba.de/cln_030/nn_191664/DE/Statistik/Kraftfahrer/Verkehrsauffaelligkeiten/Geschaeftsstatistik_20des_20VZR/vzr_z_entscheidung__stelle.html)

7.6 Sustainability and transferability issues

It will hardly ever be possible to transfer an administrative system of a particular country directly to another country, since what the best system is, largely depends on existing organizational structures in a country. One very relevant aspect is the level of centralisation or decentralisation of the policymaking and related administrative structures. For example, Germany is a federal state with a high level of autonomy of the individual states, but with the need to share information about violations at federal level. This requires the involvement of at least one organization at federal level and an organization at state level, each with its own specific tasks and responsibilities (see *Section 7.5.1*). On the other hand, a country with a less decentralised policymaking structure could more easily have a complete centrally organized administrative system.

With regard to sustainability, it must be noted that the administrative system supporting the DPS can never be static. It will need to change in accordance with changes in the organizations involved in the DPS administration, e.g. when administrative bodies merge or re-organize. It will also need to take optimal advantage of increasing levels of automation and adapt to the related opportunities to collect, store and analyse data. For research purposes, however, it would be beneficial to have one database that stores all information over time and that allows for monitoring and comparisons over time, as, for example, is the case in Germany (*Section 7.5.3*).

7.7 Main conclusions and recommendations

No scientific studies could be identified that looked at the effect of the administration and monitoring system on the overall effect of a DPS. Theoretical considerations, common sense and expert opinions result in the following recommendations:

- A central register in which all information about each single offender comes together is necessary to identify repeat offenders and to calculate the actual points' status.
- The administration of the DPS should not involve too many institutions in order to minimize the complexity of information processing.
- Administrative procedures should be clear and simple and ensure that the offence information duly arrives at the institution responsible for collecting points.

- To decrease the administrative burden of calculating points it may be reasonable to just count offences rather than have different amount of points for different offences.
- The offender should be informed about the pointing of an offence early after the incident has happened to increase the corrective effect.
- The offender should have easy access to his points' status to be well informed, to make the DPS transparent and hence, ensure the preventive effect of the DPS. Ideally, the information request should be dealt with in an automatic procedure, e.g. look up the points' status via internet. However, as not yet everybody has internet access, the information should also be available via other sources.
- Automatic letters to the offender when reaching a point threshold are preferred to decrease the administrative burden of the DPS.
- Daily statistics about notifications serve as a tool for quality assurance of administrative procedures.
- Regular statistics, at least on an annual basis, are needed to monitor the DPS and other road safety actions, e.g. changes in traffic laws. They may also help to detect deficits in enforcement strategies.
- Political decisions about changes in DPS should be informed by an analysis of monitoring statistics that sums up the possible positive and negative implications of system changes.

7.8 References

- Diamantopoulou, K., Cameron, M., Dyte, D., & Harrison, W. (1997). *The relationship between demerit points accrual and crash involvement*. Report No. 116. Clayton, Victoria: Monash University Accident Research Centre.
- Klipp S., Eichel, K. Billard, A., Chalika, Dabrowska – Loranc, M., Farrugia, M., Jost, G., Møller, M., Munnelly, M., Kallberg, V.-P., Larsen, L., Luoma, J., Runda, K., Skladany, P. & Wacowska - Slezak, J. (2011). *European Demerit Point Systems: Overview of their main features and expert opinions*. Report submitted to the European Commission. Bergisch Gladbach, Bundestanstalt für Strassenwesen.
- Schade, F.-D. (2005). *Lebt gefährlich, wer im Verkehrszentralregister steht? Das Verkehrszentralregister als Pädiktor des habituellen Verkehrsrisikos*. Zeitschrift für Verkehrssicherheit, 51 (1), 7-13.

8 Safety outcomes of DPS

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8.1 Introduction

So far, several elements of the design of a DPS and the support measures were discussed. In this chapter the focus is on the overall safety outcomes of a DPS. Firstly, selected methods to evaluate the effects of DPS on road safety will be briefly described. Secondly, an overview of the evaluation methods used in different countries will be provided and thirdly the safety outcomes of DPS with regards to accidents, injuries and (re)offending levels will be described.

The safety effects of a DPS will be discussed based on a critical review of the available research results. Methodological strengths and weaknesses of the studies will be taken into account.

Accidents and injuries potentially give the clearest and most direct indication of the safety effect of a DPS as the joint outcome of its prevention, selection and correction mechanisms (see *Chapter 2*). The effect is measured based on a relationship between the implementation of a DPS and a change in the number and/or type of accidents and/or injuries.

Assuming that the offences included in a DPS pose a safety risk, a change in the number of (re)offences in a similar but more indirect way reflects the safety effect of the implementation of a DPS.

However, the number of accidents, injuries and (re)offences is strongly influenced by other factors such as the level of enforcement. Thus, in order to evaluate the safety effect of the implementation of a DPS, possible changes in relation to such factors should be taken into account.

8.2 Methods relevant to evaluate DPS

Several different methods can be used to evaluate the safety effects of a DPS. These methods include: before-and-after studies, quasi-experimental studies, time series and cross-sectional studies. Brief descriptions of these methods will be provided in the following, as will examples of studies using a particular method.

8.2.1 Before-and-after studies

A before-and-after study can be used when it is desired to study the safety implications of a certain improvement or operational change, in this case, the implementation of a DPS. A before-and-after study can vary from very simple study designs to more advanced study designs which include control for confounding factors and/or a comparison group.

- Simple:
In the simple (naive) before-and-after study, accident counts, traffic deaths or injuries, or other safety indicator before DPS was implemented (before period) are used to predict the same indicator (accident counts, traffic deaths or injuries or other) if the DPS had not been implemented. For example, this method is used to evaluate the impact of the DPS on speeding behavior of drivers three months before and three

months after the DPS was implemented (Mehmood, 2010). The change in this indicator between the before and the after conditions is considered the treatment effect. It is simple to carry out and there are few data requirements. Disadvantages are that the effect of the passage of time on the safety of a facility is ignored and that this technique is unable to separate the treatment effect from other effects (i.e. exposure and trend effects). Other disadvantages are that this method does not address the 'regression-to-the-mean'⁶ bias. Simple before-and-after studies, which do not control for any confounding factors, cannot be trusted. There is a tendency for studies that do not control for any confounding factors to exaggerate the effects of the road safety measure being evaluated (Elvik, 2002).

- Simple with some control for confounding factors:
Using this method accident counts, traffic deaths or injuries, before DPS was implemented (before period) are used to predict the accident counts, traffic deaths or injuries if the safety treatment had not been implemented. However, there is some control for the potential effect of confounding factors. Depending on how the study is carried out, before-and-after studies may control for a number of important confounding factors, such as regression-to-the-mean effect, changes in traffic volume, or any other specific events introduced at the same time as the road safety measure such as changes in the level of enforcement. In one of the studies using the data on road accidents, traffic fatalities and driving offences, the causal effects of the DPS on road safety were identified controlling for weather conditions, police patrols, speed cameras, and gasoline price (Paola et al., 2010). Usually, confounding factors are controlled for by means of statistical estimation (Elvik, 2002).
- Before-and-after with comparison group:
With this method, it is hoped that the unknown causal factors should affect the comparison group in the same manner that they affect the treatment group. Thus, when using this method to evaluate the safety effect of a DPS, changes in the number of accidents, injuries and/or (re)offences from the before period to the after period should be similar in the treatment and the matching comparison group. A strength of this method is that the comparison group needs to be similar, but a one-to-one pairing is not required. Weaknesses are that it does not address regression-to-the-mean bias and that a conformity check between treatment group and comparison group is required in the before period. This method is difficult to apply when evaluating DPS; It is very difficult to establish a reasonable comparison group, as DPS are often implemented on a national level.

8.2.2 Quasi- experimental studies

Quasi-experimental studies are often conducted when there are practical or ethical barriers to conducting randomized controlled trial studies. For example, when evaluating the effect of a DPS, a quasi-experimental study was set up for traffic regulation offenders participating in a French rehabilitation training course to make a commitment to observe self-reported speed limits (Delhomme et al., 2008). Offenders were assigned to an experimental group, a comparison group or a control group. To the degree possible, data is collected in such a way that contribution from all variables can be determined, and where the effects of variation in certain variables remain approximately constant so that the effects of other variables can be distinguished. An advantage of this method is that observational and correlation procedures are combined with the power of experimentation. A disadvantage is that quasi-experiments usually take place in uncontrolled environments. Consequently, variables from undetected

⁶ Regression-to-the-mean refers to the tendency for an abnormally high number of accidents to return to values closer to the long term mean; conversely abnormally low numbers of accidents tend to be succeeded by higher numbers. Regression-to-the-mean is particularly likely to occur if safety measures are selected on the basis of bad accident records, as is normally the case.

sources are neither measured nor held constant, and these may produce illusory correlations between the studied variables.

8.2.3 *Time series*

For this method, data is collected at multiple time points before the DPS was implemented as well as after it was implemented. The multiple time points before the implementation allow the base trend to be estimated whereas the multiple time points after the implementation allow the intervention effect to be estimated taking the base trend into account. Data should be collected over a sufficiently long period of time before and after the implementation of the DPS. A number of statistical techniques within this design can be used depending on the characteristics of the data. For example, in one study the time series design was used to investigate the prevalence of seat belt use before and after the introduction of the DPS to detect a change over time in the number of road traffic deaths and injuries (Zambon et al., 2007). An advantage of this method is that one can be rather confident that the estimated effect is the result of the DPS implementation. However, it is often difficult to collect sufficient data points. Furthermore, this design does not protect against the effect triggered by events introduced at the same time as the road safety measure of interest, which might also improve safety performance. This is, for example, the case if at the time of implementation of a DPS the level of public debate on DPS or the level of enforcement changes. This also applies to other evaluation methods, for example, for simple before-and-after study design.

8.2.4 *Survey*

In surveys data are collected at one point in time from a sample selected to represent a larger population. For example, when evaluating the effect of a DPS, in one of the studies, a questionnaire was answered by a number of drivers where one third of them were taking a recovery course. The data were analyzed to identify the factors that are linked to taking the course, i.e. to recurrent offending (Nallet et al., 2010). In general, surveys can be conducted using several modes of data collection, including telephone interviews, face-to-face interviews, mailed questionnaires and combination of these modes. Strengths of the survey method include that it is relatively easy and quick to conduct, data on all variables is only collected once and it is good for descriptive analyses and for generating hypotheses. A weakness of surveys is that non-response may result in bias of the measures of outcome. This is a particular problem when the characteristics of non-responders differ from responders.

8.3 **Similarities and differences between countries regarding evaluation methods**

In the first part of the BestPoint project a literature search was conducted with the purpose to identify national as well as international studies about different aspects regarding DPS (see Klipp et al., 2011). The literature search included European studies as well as studies performed in Australia and USA. A large variety between countries regarding the number and type of study performed was identified. Only half of the EU countries with a DPS had performed some kind of evaluation of the system.

Based on the literature search studies focusing on the safety effects of DPSs were identified. *Table 8.1* provides an overview of these studies by country based on the evaluation method used. The table includes studies regarding DPS inside and outside the EU. Eight literature studies including two reports based on the EU project ESCAPE are not included in the table, but are included in the detailed list of references (see Annex 8.I at the end of this Chapter).

Table 8.1 *Overview of evaluation methods used in different countries*

Evaluation method	Country	Scientific article or report ⁷
Simple before-and-after	AE	Mehmood (2010)
	BR	Figueiredo et al. (2001)
	IE	Lenahan et al. (2005)
	IT	Farchi et al. (2007)
	NO	Stene et al. (2008)
Simple before-and-after with some control for confounding factors	AU	Diamantopoulou et al. (1997)
	IE	Butler et al. (2005) Hussain et al. (2006) Saeed et al. (2010).
	IT	Paola et al. (2010)
Quasi-experimental	CA	Chipman and Morgan (1975)
	US	Li and Waller (1976)
	DE	Schade (2005)
	FR	Delhomme et al. (2008)
Time series	CA	Hauer et al. (1991)
	DE	Heinzmann and Schade (2004) Ewers et al. (2004)
	ES	Costillo-Manzano et al. (2010) Pulido et al. (2010)
	FR	Bourgeon and Picard (2007)
	IT	Zambon et al. (2007)
	NL	Vlakveld and Stipdonk (2009)
Survey	AT	Gfrerer et al. (2005)
	AU	Clark and Bobevski (2008)
	CA	Chipman (1982) Redelmeier et al. (2003)
	DK	Rådet for Større Færdselssikkerhed (2005)
	ES	Gonzalez et al. (2008) Ruiz et al. (2009)
	FR	Page (1995) Nallet and Chiron (2008) Nallet (2009) Nallet (2010)
	IT	Zambon et al. (2008)
	UK	Fox (2008)

8.4 Facts and evidence

In principle DPS can improve road safety in several ways, concerning primarily either driver behaviour (accident risk) or exposure. Drivers may become more careful in order to avoid getting (more) demerit points. After arriving at a critical amount of points they may become more cautious to avoid withdrawal of the driving licence. Drivers who have their licence suspended because of exceeding the point limit are not allowed to drive at all.

⁷ For further details regarding the references please see Annex 8.I at the end of this Chapter

In the following paragraphs research results concerning the effects of DPS on accidents and injuries, offences, and behaviour are presented successively. Most weight is given to studies published in scientific papers and other studies that were methodologically sound. The studies typically concerned the effects of DPS on accidents or offences.

8.4.1 Accidents and injuries

Elvik et al. (2009) refer to two studies of the effects of DPS on accidents. First, Stene et al. (2008) found that the DPS, which was introduced in Norway in 2004, had no effect on the number of fatalities or severe injuries resulting from road accidents. Secondly, Li & Waller (1976) evaluated the habitual offenders programme in North Carolina that resembles a DPS. They found no effect on accident involvement.

Redelmeier et al. (2003) found that in Canada the risk of a fatal accident in the month after a conviction for a traffic offence was 35% lower than in a comparable month with no conviction for the same driver, and the effect was greater for speeding violations with penalty points than without. The effect was substantially reduced after two months. Also in Canada Chipman and Morgan (1975) showed that of the traits considered (demerit points, age, sex, class of licence, history of previous accidents), demerit points represented the only variable of importance in predicting future collision involvement. Later Chipman (1982) found that the level of demerit points was not associated with risk of collision if exposure was accounted for, except in drivers who typically drove small amounts. Chen et al. (1995) and Diamantopoulou (1997) showed that drivers' prior offences can be used to predict subsequent accident involvement. However, one fine already had so much prediction power that the second and third one had hardly any value. Therefore the effects on accidents of DPS – as a tool that uses data on accumulated offences – may be limited. In Germany Schade (2005) concludes that drivers with demerit points continue to present a substantial traffic risk and knowledge of the number of registered traffic offences substantially increases the accuracy in prediction of future behaviour.

In Ireland the annual number of road accident fatalities fell from 409 to 333 after the implementation of DPS in 2002 and the number of maxillofacial injuries caused by collisions was reduced by 61%, even though there were no changes in the level of enforcement (Hussain et al., 2006). In Italy the introduction of DPS in 2003 reduced road accidents by about 10 % and traffic fatalities by about 25 % (De Paola et al., 2010), and there were 13 % less injuries requiring hospital treatment in the year following the introduction of DPS in 2003 (Farchi et al., 2007). The positive effects of DPS on accidents lasted no longer than between 6 and 24 months after the introduction of the DPS. For example, in Spain Costillo-Manzano et al. (2010) found that DPS implemented in July 2006 reduced the number of highway accident fatalities by 12.6% but the effect disappeared within two years.

8.4.2 Offences

In Italy the number of traffic offences detected by public authorities was reduced by 39 % after the introduction of the DPS, and the reduction was largest for offences that were relevant for the DPS system (De Paola et al., 2010). In the United Kingdom DPS has reduced speeding offences of drivers who are in danger of losing their licence for the next offence (Broughton, 2008). Studies conducted in Australia and the UK found that the period between offences increased when the penalty points of drivers approached the point limit (Hague, 1987; Corbett et al., 2008, cited in SWOV, 2010). In France, the number of points lost and of the suspended licences for total loss of points has decreased for the first time after almost 20 years since the introduction of DPS in 1992, reflecting evolution in road user

behaviour (Nallet, 2009; ONISR, 2009). In the Netherlands Vlakveld & Stipdonk (2009) found that in the Dutch DPS for novice drivers, drivers who already have demerit points are more likely to get additional points than other drivers, and most points are received by a small group of drivers. In the North Carolina study no effect on traffic violations was detected (Li & Waller, 1976).

8.4.3 Behaviour

The introduction of DPS in Norway had no effect on mean speed of traffic or red light running in general, but the self-reported behaviour of drivers who had collected points improved with increasing number of penalty points (Stene et al., 2008). In the city of Al Ain in the United Arab Emirates DPS had no effect on speeds, but this was attributed to ineffective enforcement (Mehmood, 2010). Broughton (2008) concluded that the threat of disqualification does cause drivers who approach their penalty point limit following a sequence of speeding convictions to modify their behaviour in a way which mitigates the likelihood of a further conviction and consequent disqualification. In Italy the introduction of DPS in 2003 increased seat belt wearing rate of drivers from 54% to 83% and that of front passengers from 53% to 76% three months after implementation (Zambon et al., 2008). The effect remained and even grew slightly after 15 months. However, the introduction of DPS was associated with doubling of fines and information campaigns.

8.5 Specific case evidence: the Norwegian DPS

In Norway DPS was introduced in the beginning of 2004. In the Norwegian system offences correspond to either 1 or 2 penalty points, and the collection of at least 8 points within 3 years leads to cancellation of the driving licence, usually for 6 months. Drivers who have collected 6 penalty points receive a warning letter. The system was evaluated, covering the period 2004 - 2007, to find out whether the DPS resulted in safer traffic behaviour and fewer fatalities and serious injuries (Stene et al., 2008). The evaluation consisted of:

- a. An analysis of changes in traffic behaviour (roadside observations of mean speed and red light running) and accidents;
- b. A questionnaire survey of drivers' knowledge of the system;
- c. A questionnaire survey of self-reported driving behaviour in early 2004 and three years later;
- d. A questionnaire survey of self-reported behaviour among drivers who had collected at least 6 points and had received a warning letter; and
- e. Interviews of persons in the Norwegian Road Administration and the police about the organisation and operation of the system.

By the end of August 2007 286,402 Norwegian drivers had received penalty points (approximately 10% of driving licence holders), and 122 (0.04%) of them had collected at least 8 points. The total number of offences recorded in the system was 340,131, of which 97.5% concerned speeding offences.

No effects on mean speed, red light running and number of accidents were found.

According to the self-reported data, 90% of drivers said that they had some knowledge of the system in early 2004, and 36% said they were satisfied with the information given. More information should have been given about the offences included in the system, and the consequences of accumulating points. Drivers in general were motivated to comply with the DPS.

The survey concerning all drivers did not reveal significant changes in self-reported driving behaviour from 2004 to 2007. A relatively large proportion of drivers who had received at least 6 penalty points said they had improved their behaviour and the change became more evident with increasing number of points. This result was supported by the fact that they collected fewer points during the last year (2007) than during the two previous years.

It was concluded that DPS has a positive effect on the behaviour of drivers who receive at least 6 penalty points during a 3-year period. The fact that no changes were detected in the total number of killed or seriously injured persons or in driving speeds was explained by the fact that the proportion of drivers who said to have changed their behaviour because of DPS is small compared to the driving population.

8.6 Main conclusions and recommendations

Although quite a few evaluation studies on DPS have been carried out, many of them have methodological shortcomings. In particular, most evaluation studies performed do not enable disentanglement of the effects of the DPS and concomitant measures such as increased enforcement levels, higher fines, and publicity campaigns. In addition, the large variety in the design of DPS calls for evaluations that focus more specifically on the different elements included (number of points, number and type of convictions etc.) in order to identify general principles regarding a design that will effectively enhance road safety. Therefore, there is still a strong need for further high quality studies about the effectiveness of DPSs on a national as well as an international basis.

Based on the existing literature, there is some evidence that the implementation of a DPS has a positive effect on road safety in terms of accidents and injuries during the first year after implementation. However, there is no convincing evidence that any of the existing DPSs in EU countries is particularly effective in improving road safety in the long run.

As indicated, the effects of DPS are frequently mixed with effects of coinciding changes in legislation and enforcement levels, and it is often practically impossible to show how much of the total effect can be attributed to the DPS. The short duration of the positive effect may be due to the lower than desirable level of enforcement: drivers who adopted more cautious behaviour after the implementation of DPS in fear of getting penalty points soon find out that the risk of being punished for offences is so low that it is not necessary to let it affect one's behaviour. Public information campaigns and increased enforcement can be used to increase drivers' subjective risk of detection and to maintain the awareness of the fact that the DPS is still in effect thereby turning the short term safety effect into a longer lasting effect.

Although further evidence is needed the existing studies indicate that the effectiveness of a DPS depend on the specific design of the system (offences included, number of points etc.), enforcement levels as well as the use of intermediate and rehabilitation measures as discussed in more detail in each of the preceding chapters.

8.7 References

- Broughton, J. (2008). Recent trends for speeding convictions and totting up disqualifications. TRL Published Project Report, PPR181.
- Butler, J. S, Burke, J. P., Healy, D. G., Stephens, M. M., Mc Manus, F., Mc Cormack, D., O'Byrne, J. M., Poynton, A. R. (2005). Trends in RTA related spinal injuries: the post penalty points era. Presented at: British Association of Spinal Surgeons Meeting 2005,

- Aberdeen, Scotland. February, 2005. Sylvester O'Halloran Surgical Scientific Meeting 2005, Limerick, March, 2005.
- Chen, W., Cooper, P., Pinili, M. (1995). Driver Accident Risk in relation to the Penalty Point System in British Columbia. *Journal of Safety Research*, 26 (1), 9-18.
- Chipman, M.L. (1982). The Role of Exposure, Experience and Demerit Point Levels in the Risk of Collision. *Accident Analysis and Prevention*, 14, 475-483.
- Chipman, M.L., Morgan, P. (1975). The role of driver demerit points and age in the prediction of motor vehicle collisions. *British Journal of Preventive and Social Medicine*, 29, 190-195.
- Corbett, C., Delmonte, E., Quimby, A., Grayson, G. (2008). Does the Threat of Disqualification Deter Drivers from Speeding? Department for Transport, Road Safety Research Report 96.
- Costillo-Manzano, J. I., Castro-Nunõ, M. & Pedregal, D.J. (2010). An econometric analysis of the penalty points system driver's licence in Spain. *Accident analysis and Prevention* 42, 1310-1319.
- Delhomme, P., Kreel, V., Ragot., I. (2008). The effect of the commitment to observe speed limits during rehabilitation training courses for traffic regulation offenders in France. *Revue européenne de psychologie appliquée*, 58, 31 – 42.
- Diamantopoulou, K., Cameron, M., Dyte, D., Harrison, W. (1997). The Relationship between Demerit Points Accrual and Crash Involvement. Montash University, Accident Research Centre, Report No. 116.
- Elvik, R. (2002). The importance of confounding in observational before-and-after studies of road safety measures. *Accident Analysis and Prevention* 34, 631-635.
- Elvik, R., Høye, A., Vaa, T., Sørensen, M. (2009). *The handbook of road safety measures, second edition*. Emerald.
- Farchi, S., Chini, F., Rossi, P.G., Camilloni, L., Borgia, P. & Guasticchi, G. (2007). Evaluation of the health effects of the new driving penalty point system in the Lazio Region, Italy, 2001-4. *Injury Prevention* 13, 60-64.
- González, L. M., Ruiz, J. R., Gil, F. T. (2008). Influencia del permiso de conducción por puntos en el comportamiento al volante: percepción de los conductores. *Psicothema*, 20 (4), 652-658.
- Hague, M.O. (1987). Evaluation of the Demerit Point Systems DPS in deterring traffic offences. Road Traffic Authority RTA, Hawthorn, Victoria. General Report GR 87/21.
- Hussain, O. T., Nayyar M.S., Brady F.A., Beirne, J.C., Stassen, L.F.A. (2006). Speeding and maxillofacial injuries: Impact of the introduction of penalty points for speeding offences. *British Journal of Oral and Maxillofacial Surgery*, 44, 15–19.
- Klipp, S., Eichel, K., Billard, A., Chalika, E., Dabrowska-Loranc, M., Farrugia, B., Josst, G., Møller, M. Munnelly, M., Kallberg, V.P., Larsen, L., Luoma, J., Runda, K., Skladany, P., Wacowska-Slezak, J. (2011). BESTPOINT. European Demerit Point Systems: Overview of their main features and expert opinions. Deliverable 1. MOVE/SUB/2010/D3/300-1/S12.569987-Bestpoint.

- Li, L.K. & Waller, P.F.(1976). Evaluation of the North-Carolina habitual offender law. Chapel Hill, NC. University of North Carolina, Highway Safety Research Center.
- Mehmood. A. (2010). Evaluating impact of demerit points system on speeding behaviour of drivers. *European Transport Research Review*, 2, 25–30.
- Nallet, N. (2009). Profils de personnalité en lien avec les infractions et/ou les accidents de la route: qui sont les stagiaires permis à points? Université Lumière Lyon 2: Institut de Psychologie, Laboratoire d'Etude et d'Analyse des Comportement et des Modèles (LEACM-CRIS). Thèse de Doctorat en Psychologie.
- Nallet, N. (2010). Who takes driving licence point recovery courses in France? Comparison between course takers and ordinary drivers. *Transportation Research Part F*, 13, 92-105.
- Nallet, N. & Chiron, M. (2008). Individuals taking a French driving license point recovery course: Their attitude towards violations. *Accident Analysis and Prevention*, 40, 1836-1843.
- ONISR (2009). La sécurité en France. Bilan de l'année 2008. Paris., La documentation Française 2009, 115-122.
- Paola M. De., Scoppa, V. (2010). The Deterrent Effects of Penalty Point System in Driving Licenses: A Regress. Department of Economics and Statistics, University of Calabria. Working Paper n. 04 – 2010.
- Redelmeier, D.A., Tibshirani, R.J., Evans, L. (2003). Traffic – law enforcement and risk of death from motor-vehicle crashes: case-crossover study. *The Lancet*, 361, 2177 – 2182.
- Ruiz, J.R., González, L.M., Gil, F.T. (2009). Valoracióim die los coedectores españoles sobre el permiso por peetos. *Psicothema* , 21 (2), 294-299.
- Schade, F. D. (2005). Lebt gefährlich, wer im Verkehrszentregister steht? Das verkehrszentraleger als Prädiktor des habituellen Verkehrsrisikos. *Zeitschrift für Verkehrssicherheit*, 51.
- Stene, T.M., Sakshaug, K. & Moe, D. (2008). Evaluering av prikkbelastning av førerkort. SINTEF rapport A4448. Trondheim. SINTEF teknologi og Samfunn.
- SWOV (2010). Fact sheet Demerit points systems. April 2010. Institute for Road Safety Research SWOV, Leidschendam.
- Vlakveld, W.P. & Stipdonk, H. (2009). Eerste verkenning naar de effectiviteit van het beginnersrijbewijs in Nederland. D-2009-2. SWOV Institute for Road Safety Research, Leidschendam.
- Zambon, F, Fedeli, U., Visentin, C., Marchesan, M., Avossa, F.,Stefano Brocco, S., Spolaore, P. (2007). Evidence-based policy on road safety: the effect of the demerit points system on seat belt use and health outcomes. *The Journal of Epidemiology and Community Health*, 61, 877–881.
- Zambon, F., Fedeli, U., Milan G., Brocco, S., Marchesan, M., Cinquetti, S., Spolaore, P. (2008). Sustainability of the effects of the demerit points system on seat belt use: A region-wide before-and-after observational study in Italy. *Accident Analysis and Prevention*, 40, 231 – 237.

Annex 8.I: Overview of evaluation studies

Country	Author(s)	Year	Title	Publication
AE	Mehmood, A.	2010	Evaluating impact of demerit point system on speeding behavior of drivers	Eur Transp Res Rev, 2, 25-30
AT	BMVIT	2009	Evaluation des Vormerksystems	Hintergrundbericht zur Presseinformation
AT	Gfrerer, W. et al.	2005	Einstellungen zum Vormerksystem	Psychologische Lösungen
AU	Clark & Bobevski	2008	Disqualified Drivers in Victoria. Literature Review and In-Depth Focus Group Study	Monash university accident research centre, report no. 274
AU	Diamantopoulou, K. et al.	1997	The relationship between demerit points accrual and crash involvement	Monash university accident research centre, report no. 116
BR	Figueiredo, L. F. P. et al.	2001	Increases in fines and driver licence withdrawal have effectively reduced immediate deaths from trauma on Brazilian roads: first-year report on the new traffic code.	Injury, Int. J. Care Injured, 32, 91-94
CA	Redelmeier, D.A. et al.	2003	Traffic-law Enforcement and risk of death from motor-vehicle crashes: case crossover study	The Lancet 361, 2177-2182
CA	Chen, W. et al.	1995	Driver Accident Risk in Relation to the Penalty Point System in British Columbia	Journal of Safety Research 26, 9-18
CA	Hauer, E. et al.	1991	Estimating the accident potential of an ontario driver	Accident Analysis and Prevention 23, 133-152
CA	Chipman, M. L.	1982	The role of exposure, experience and demerit point levels in the risk of collision	Accident Analysis and Prevention 14, 475-483
CA	Chipman, M. L. & Morgan, P.	1975	The role of driver demerit points and age in the prediction of motor vehicle collisions	British J. prev. soc. Medicine 29, 190-195
CZ	Heinrich, J. et al.	2007	Analysis of the Impact of the Law 411/2005 and Related Rules on Traffic Accidents	
DE	Heinzmann, H. J. & Schade, F. D.	2004a	Risikogruppen im Verkehrszentralregister als Basis für eine Prämiendifferenzierung in der KFZ-Haftpflicht	Berichte der Bundesanstalt für Strassenwesen, Heft M 159, Bergisch Gladbach
DE	Ewers, H. J. et al.	2004b	Risikoorientierte Prämiendifferenzierung in der Kfz-Haftpflichtversicherung	Berichte der Bundesanstalt für Strassenwesen, Heft M 160, Bergisch Gladbach
DE	Schade, F. D.	2005	Lebt gefährlich, wer im Verkehrszentralregister steht? Das Verkehrszentralregister als prädiktor des habituellen Verkehrsrisikos	Zeitschrift für Verkehrssicherheit 51, 7-13
DK	Rådet for Større Færdselssikkerhed	2005	Pas på kørekortet. Evaluering af klippekortet og strengere straffe for spritkørsel	Rådet for Større Færdselssikkerhed
DK	Carstensen, G.	2001	Klippekortets muige effekt på færdselssikkerheden	DTF
Country	Author(s)	Year	Title	Publication
ES	Costillo-Manzano, J. I. et al.	2010	An econometric analysis of the penalty points system driver's licence in Spain	Accident analysis and Prevention 42, 1310-1319
ES	Pulido, J. et al.	2010	Impact of the demerit point system on road traffic accident mortality in Spain	J Epidemiol Community Health, 64, 274-276
ES	Ruiz, J. R. et al.	2009	Valoracion de los conductores espanoles sobre el permiso per puntos	Psicothema, 21, 2, 294-299
ES	Gonzalez, L. M. et al.	2008	Influencia del permiso de conducción por puntos en el comportamiento al volante: percepción de los conductores	Psicothema, 20, 4, 652-658
FR	Nallet, N.	2010	Who takes driving licence point recovery courses in France? Comparison between course takers and ordinary drivers	Transportation Research Part F 13, 92-105.

FR	Nallet, N. & Chiron, M	2008	Individuals taking a French driving license point reovery course: Their attitude towards violations	Accident Analysis & Prevention 40, 1836-1843
FR	Delhomme, P. et al.	2008	The effect of the commitment to observe speed limits during rehabilitation training courses for traffic regulation offenders in France	Revue europeenne de psychologie appliquee, 58, 31-42
FR	Bourgeon, J. M. & Picard, P	2007	Point-record driving licence and road safety: An economic approach	Journal of Public Economics 91, 235-258
FR	Nallet, N.	2009	Profils de personnalité en lien avec les infractions et/ou les accidents de la route: qui sont les stagiaires permis à points?	Université Lumière Lyon 2: Institut de Psychologie, Laboratoire d'Étude et d'Analyse des Comportements et des Modèles (LEACM-CRIS). Thèse de Doctorat en Psychologie. 2009
FR	ONISR	2009	La sécurité routière en France	Bilan de l'année 2008. Paris, La documentation Française 2009, 115-122
FR	Delhomme, P. et al	2006	Engagement et infleichissement de comportement a risque d'automobilistes infractionnistes participant aux stages de sensibilisation aux courses et consequences des accidents de la route	Report. Convention DSCR-INRETS 01/009/T
FR	Page, Y	1995	Les stages de sensibilisation aux accidents de la route	Cahiers de l'Observatoire [ONISR] 1995, 89-136
IE	Saeed, A. et al.	2010	Ocular injury requiring hospitalisation in the South East of Ireland: 2001-2007	Injury, International Journal Care Injured 41, 86-91
IE	Hussain, O. T. et al.	2006	Speeding and maxillofacial injuries: Impact of the introduction of penalty points for speeding offences	British Journal of Oral and Maxillofacial Surgery, 44, 15-19
IE	Lenahan, B. et al.	2005	Immediate impact of 'penalty points legislation' on acute hospital trauma services	Injury, Internation Journal of the Care of Injured 36, 912-916
Country	Author(s)	Year	Title	Publication
IE	Butler, J. S. et al.	2005	Trends in RTA related spinal injuries: the post penalty points era	Irish journal of medical science, 175, 20-23
IE	Healy, D. G., et al.	2004	Speed and spinal injuries	Injury, Internation Journal of the Care of Injured 35, 908-912
IT	Paola, M. D. et al.	2010	The deterrent effects of penalty point system in driving licences: A regression discontinuity approach	Working Paper n. 04 - 2010
IT	Zambon, F. et al.	2008	Sustainability of the effects of the demerit points system on seat belt use: A region-wide before-and-after observational study in Italy	Accident Analysis and Prevention, 40, 231-237
IT	Zambon, F. et al.	2007	Evidence-based policy on road safety: the effect of the demerit points system on seat belt use and heath outcomes	J Epidemiol Community health, 61, 877-881
IT	Farchi, S. et al	2007	Evaluation of the health effects of the new driving penalty point system in the Lazio Region, Italy, 2001-4	Injury Prevention 13, 60-64
IT	Basili, M. and A Nicita	2005	Deterrence and compliance in a demerit point system	American Low and Economics Association Annual Meetings, working paper
NL	Vlakveld, W. & Stipdonk, H.	2009	Eerste verkenning naar de effectiviteit van het beginnersrijbewijs in Nederland	Report. SWOV D-2009-2
NL	SWOV Institute for Road Safety Research	2008	Demerit points systems	SWOV Facts Sheet
NL	Vlakveld, W. P.	2004	Het effect van puntenstelsels op de verkeersveiligheid	Report. SWOV R-2004-2

NO	Elvik, R & Vaa, T	2004	Warning letters, demerit points and driving license suspension	The Handbook of Road Safety Measures
NO	Vaa	1998	International experiences with DPS.	Working paper (Norwegian)
NO	Vaa & Glad	1995	Influencing speed: A literature survey of police surveillance automatic enforcement sanctions information campaigns individual and collective feedback	TOI working report 1006/1995
UK	Broughton, J.	2008	Recent trends for speeding convictions and totting up disqualifications	TRL Report 181
UK	Fox, J	2008	Impact Assessment of graduated fixed penalties and fixed penalty points for speeding offences	Consultation, Department for Transport
International	ESCAPE	2003	Legal and administrative measures to support enforcement of traffic rules	Deliverable 5
International	ESCAPE	2003	Final report	Deliverable 10

9 Non-safety outcomes

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9.1 Introduction

Besides safety effects, a DPS can also generate undesirable effects such as committing fraud to avoid negative consequences ('point trafficking') or unlicensed driving after the licence has been withdrawn. This Chapter discusses several of these non-safety outcomes and ways to prevent them. Since there are hardly any scientific or formal publications about this type of undesirable side-effects of a DPS, this Chapter relies to a substantial extent on the unpublished experiences in France.

9.2 Facts and figures about unlicensed driving

Unlicensed driving is a major road safety problem in many countries. Surveys (e.g. Sweedler & Stewart, 2007) have shown that a significant proportion of drivers continue to drive after their licence is withdrawn. Unlicensed driving is related to different situations (e.g. see Silcock et al., 1999):

- Drivers who drive but who have never possessed any form of licence;
- Drivers who have previously held a licence but who have been disqualified; and
- Drivers who possess only a provisional/probationary licence (without a permission for solo driving) but who, nevertheless, drive unaccompanied;
- Drivers with a licence that is not valid for the vehicle they drive.

Especially the second bullet, about disqualified driving, is directly related to a DPS. A first relevant question in this respect relates to the prevalence of unlicensed driving after disqualification. Data from Germany, France, Sweden, Norway and Belgium, as presented by Sweedler & Stewart (2007) show that up to 30% of the drivers sentenced for alcohol violations continue driving after their licence was suspended. Overall data for other countries and for licence disqualifications after other types of violations is lacking.

In the absence of such statistics, some opinions and considerations of experts on unlicensed driving were collected in the first part of BestPoint. These experts generally confirm that objective data about the prevalence of continued driving after licence withdrawal is missing (Klipp et al., 2012).

The next sections present some general characteristics about unlicensed driving/drivers in general; unfortunately it is not possible to distinguish between driving after licence disqualification and other forms of unlicensed driving.

9.2.1 The safety risk of unlicensed driving

The UK Department for Transport reported that in the UK, breath test results showed that 17% of disqualified drivers were breath tested positively after an accident compared with the national average for all post-crash tests of 3% (Knox et al., 2003). The report notes that while unlicensed drivers account for less than 1% of total hours driven, they are up to nine times more likely to have an accident than licensed drivers. By comparing crashes involving unlicensed drivers with all crashes, the report states that: "they typically involve a higher severity; they involve a higher number of casualties; there are more male casualties; the age of these casualties is lower; a higher proportion occurs on unclassified roads, and in low-speed environments; the greatest number of crashes tend to occur at the evening peak, but weekend crashes are over-represented, as are those late in the evening or early morning; passengers are significantly over-represented for this group; there is a higher proportion of motorcyclists involved in crashes involving unlicensed drivers compared with crashes not involving unlicensed drivers."

However, the report of the AAA Foundation for Traffic Safety on unlicensed driving (Scopatz et al., 2003) concluded that there was no evidence available to link unlicensed driving with disproportionate accident risk and stated that "it is unknown whether unlicensed driving leads to more road accidents than a similar amount and mix of driving by licensed but otherwise similar drivers". So, we can see that the results are contradictory as the AAA foundation applies another analysis method by matching licensed and unlicensed drivers so they are similar on various other relevant aspects such as age and gender that may also explain increased risks.

9.2.2 Individual characteristics of related to unlicensed driving

Characteristics of unlicensed drivers in the UK were assessed from the results of postal surveys and in more detail from telephone and face-to-face interviews (Knox et al., 2003). The results show that many of the unlicensed drivers are young and male; they tend to have a high belief in their own driving ability; they tend to be more likely to drive without insurance, and to drink and drive; they tend to agree with statements supporting aggressive driving (such as 'I enjoy the sensation of accelerating rapidly'); they are less likely to have passed the theory test. The study identified the following factors to have a key influence on the decision to drive during disqualification: negative attitudes towards the sanction; denial of the risk of one's own driving behaviours; very low perceptions of the risk of detection; personal and vicarious experiences of punishment avoidance; and negative attitudes towards alternatives.

The most common reason provided for the decision to continue driving was to maintain one's employment, although driving for family and social reasons was also commonly reported. Other reasons as to why unlicensed driving occurred, included:

- in the event of an emergency;
- for convenience;
- because they could not afford lessons or the driving test;
- from a need to practice driving;
- for lifestyle and self-image reasons;
- for a lack of alternative transport (for example in rural areas).

A number of unlicensed driving 'danger points' were also identified by the above report of the British Department for Transport, i.e. situations whereby the chances of driving unlicensed increased. These included: those who couldn't wait between the theory and practical driving test, particularly if they were confident of passing; failing the theory test; those who thought they have 'nothing to lose'; for some it was too late to 'come clean'; those who were from another driving culture; socially excluded elderly (for instance those not now able to drive on medical grounds or a non-licence holder now driving due to death of a spouse).

Finally, a number of groups who may be susceptible to some form of unlicensed driving for different reasons have been encountered. These groups are not necessarily mutually exclusive:

- rural residents with poor public transport;
- shift workers;
- low income earners who cannot afford lessons, test or insurance;
- excluded young individuals – lack of stimulation and activities;
- those ignorant of the regulations – e.g. foreign drivers;
- old people excluded from driving for medical reasons;
- widows with no licence;
- men adhering to car culture under peer pressure;
- joy riders;
- those with a criminal personality and those exposed to a criminal environment;
- young persons who are disqualified and do not try to regain their licence.

9.2.3 Recommendations for preventing unlicensed driving

Reports have been produced in the US, UK and Australia which give recommendations to prevent unlicensed driving. For example, the AAA Foundation for Traffic Safety (Scopatz et al., 2003) recommends three categories of measures to address the problem of unlicensed driving and prevent it:

- laws effective in combating unlicensed driving (like vehicle impoundment, seizure and immobilization, special plates or stickers, ignition interlock programmes, etc.);
- procedures that encourage compliance with the laws (reducing plea bargaining, creating links between drivers and vehicles files, etc.);
- systems and procedures that help law enforcement officers, prosecutors and courts (create citation-tracking systems, easy to use drivers' records, etc.).

There are several differences in the social acceptability of this type of measures. For example, the UK Department for Transport (Knox et al., 2003) estimates vehicle impoundment, seizure and immobilization as socially unacceptable. This report suggests other recommendations, like:

- Employers should be required to check their employees' driving licences when taking on new staff, and periodically afterwards if driving is a part of the job.
- A review of the consistency of the penalties imposed for unlicensed driving (and possibly other motoring offences) by different courts should be undertaken to determine the extent of inconsistency, its implications, and if deemed necessary, measures to improve consistency.
- An evaluation of the current community based motor project schemes should be undertaken to assess their effectiveness in changing attitudes and behaviour.
- A successful model that would address the needs of different groups of offenders and those who are in danger of offending for the first time should then be implemented nationally.
- An investigation should be undertaken to assess the possibility of introducing some form of financial assistance to those learning to drive, possibly through loans or through the Benefit Agency as part of job seeking.

- Research should be undertaken to assess the effect of failing the driving test and this should include an assessment of whether this contributes to unlicensed driving.
- The use of a 'Crimestoppers' telephone hotline (or a similar service) for reporting unlicensed driving should be publicized, so that a trial can be undertaken of its effectiveness.

9.3 Special case evidence: the French DPS

9.3.1 Driving unlicensed in France

Here an example is presented of the impact of DPS on the loss of licences in France, based on French official statistics from ONISR (Bilan 2010, Observatoire National de Sécurité Routière).

First, let us describe the general situation of the unlicensed driving problem in France. The law 2004-204 of March 2004, called the "Perben Law II", includes a provision for criminalizing the offence of driving without a licence. Indeed, in the mid-1980s, considering the offence as a "paper type-offence", the government had turned the offence in a simple fifth class violation (Law 85-1407 of 30 December 1985 and Decree 86-1043 of 18 September 1986). At that time only recidivism was considered as a serious offence. Now driving without a licence is once again a serious offence, punishable by imprisonment, a penalty fee and a licence suspension of five years.

The little knowledge on unlicensed drivers has generated an outbreak of prejudice on their profiles, often without scientific basis. One example concerns the number of unlicensed drivers in France. Official statistics on road safety mention 410,000 unlicensed drivers (of an estimated 37.5 million drivers), while the press reports much higher figures from one to two million.

Other official figures are provided by the ONISR in its annual report (ONISR, 2010). In 2009, 2.3% of drivers involved in an injury accident, and 4.4% of drivers involved in a fatal accident were driving unlicensed. This represents 1,663 accidents including 166 fatalities. Obviously these data do not say anything about the relative risk of unlicensed drivers, since the percentage of unlicensed drivers in the total driving population is unknown. Among the unlicensed drivers involved in injury accidents, 1.8% were drivers who had never got their licence or who drove with a licence that was not valid for the vehicle they drove. For fatal accidents, this was the case for 3.3% of drivers involved. The exact percentage of accident involved drivers with a withdrawn or suspended licence is unknown, but consequently relatively small. However, according to the ONISR, the number of unlicensed drivers has been increasing since 2005 after a temporary decrease between 2002 and 2005. In addition, even though their share may be relatively small, it must be noted that accidents of unlicensed drivers are twice as severe as the accidents of licensed drivers (ONISR, 2010).

9.3.2 Points and licence suspension in France; developments over time

Though not directly related to potential non-safety outcomes of DPS, this paragraph presents, just as a general background, a brief overview of how, in France, DPS results evolve with time. To understand the figures below, it is important to remind that there are 37.5 million of licence holders in France and that the French system deduces/removes points for violations rather than adding them; a driver starts with a number of 12 points.

In 2010, after two years of stability, the number of offences generating points showed a sharp increase of 5.9%. In 2010, the number of penalty points increased by 9.3% after two years of decline (-0.5% in 2008 and -2% in 2009), exceeding 10 million. The increase in the density of speed cameras was the main reason for this increase.

In 2010, 2.3 million of licence holders have restored their original number of 12 points after 3 years without offence. This figure is unchanged since 2009 after four years of significant increase. In 2010, the number of invalidated licences for total loss of points decreased for the second year since 2002 (-7% in 2010 and -6% in 2009). The number of invalidated licences for total loss of points was 85,700 in 2010 against 92,123 in 2009. The number of invalidated licences decreases for men (- 8% in 2010), but conversely increased for women (+ 4.6%). However, men account for 92% of invalidated licences. Invalidated probationary licences (for novice drivers) represent 20.9% of all licences invalidated in 2010.

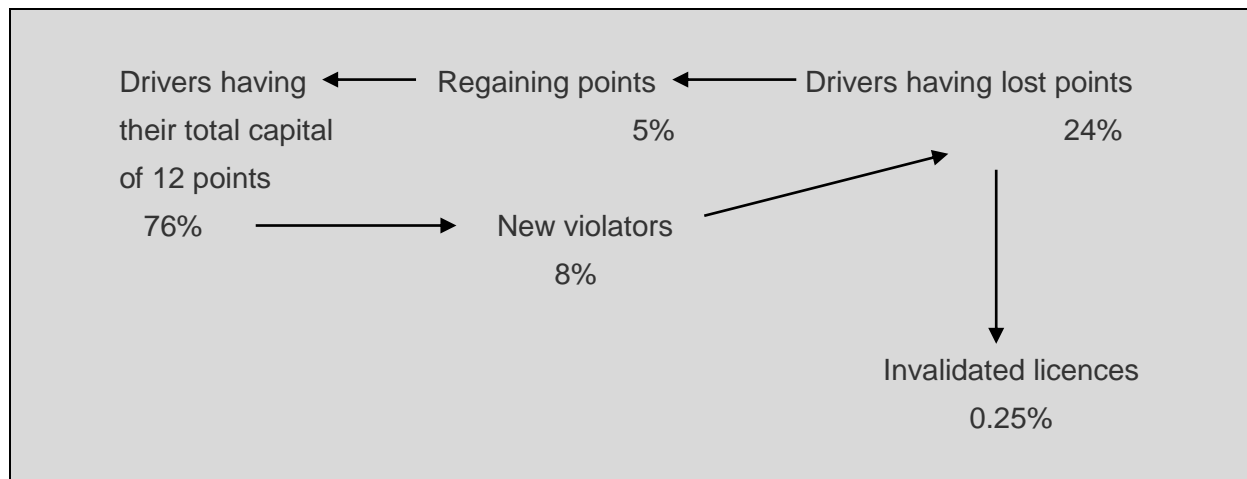
9.3.3 Punishments for unlicensed driving

Driving without a valid licence belongs to what is called “papers-type” offences. These include driving without a licence, the lack of insurance, driving despite suspension of the licence, and absence of plates. Offences related to the lack of driving licence and the lack of insurance are often associated with each other within the same sentence. Most of these offences have been punished more severely since 2004. In 2009, there were almost 100,000 convictions for “paper-type” offences. Around 23% of the sanctions for these offences were jail sentences, half of which were effective jail sentences. The average imprisonment time was 3 months. For 65% of these convictions, a fine was imposed. For driving during licence suspension, the fine was 462 Euro on average.

9.3.4 Number of invalidated licences

In 2010, around 85,000 drivers were disqualified through the DPS system. This is 0.25% of all French drivers. Although this is not a large share, it has been increasing during the latest years: +27% in 2006; +29% in 2007; +11% in 2008. Around 92% of invalidated licences concern male drivers. *Figure 9.1* below summarizes the data on 35 million French drivers in one year, i.e. 2008. In 2008 approximately three quarters of the drivers had the full 12 points. In that year 8% of the drivers lost one or more points; and 16% had lost points in one of the previous years, resulting in around one quarter of drivers who had not their full 12 points. During 2008 around 5% were able to regain points up to the original 12 by successfully completing a driver improvement course.

Figure 9.1 *Percentages of French drivers in various stages of the DPS in 2008*



Looking at drivers who have had their licence for at least 3 years, we see that at the end of a year, 75% still have their total of 12 points and 90% have between 10 and 12 points. Less than 4% of drivers have 6 points or less, and 0.7% of drivers have left between 1 and 3 points.

9.3.5 *Type of violations corresponding to the invalidation of the licence*

Many French citizens believe that invalidation often comes after a series of small speed violations detected by speed cameras, by accumulating one point for each minor speeding violation. However, official data from the ONISR do not confirm this.

The distribution of types of last violations before the invalidation of the licence is different when we compare it to the general distribution of violations:

- Alcohol and illicit drugs are the most frequent violation associated with invalidation (30% against 13% for the overall population of drivers); this seems to be the same in Finland as reported in Deliverable 1 of BestPoint (Klipp et al., 2012).
- speeding accounts for 24% and slight speeding for 8%.
- seatbelts and highway code violations are also overrepresented among invalidated drivers.

9.3.6 *Drivers' appeals in court with regards to licence invalidation*

In France drivers can go to court to contest their licence invalidation. This constitutes a massive burden to the courts; not so much because it is legally difficult but because of the high numbers: it represents 6.3% of the new cases in administrative courts. The vast majority of the appeals against licence invalidations are based on the failure to deliver the information in advance as stipulated in Article L. 223-3 of the French Highway Code. Therefore, the intervention of the judge has the sole purpose of ascertaining whether or not the administration has issued this information.

According to French traffic safety experts, it is advisable to establish a mandatory administrative "pre-trial", which would have three advantages:

- For citizens, since the process would be quicker, since they do not have to wait for the court's decision;

- For administration, since it would then be able to recognize in time that the invalidation was unlawful and should be withdrawn, or, conversely, to show the user that his claim is unfounded and has no chance to succeed in court;
- For the administrative courts, since it would reduce work load. The Department of Justice estimates that 25 to 30 full-time staff are involved in the litigation of penalty points.

9.4 Facts and figures about points trafficking

9.4.1 The French experience

A particular problem related to DPS is points trafficking: collected points are transferred to someone who does not yet have points. This paragraph presents the experiences in France. Since official scientific studies or figures do not exist, the reported experiences are based on non-scientific sources:

- <http://blog.radars-auto.com/index.php?post/2007/04/02/33-le-traffic-des-points-de-permis>
- Autonews.fr
- The French newspaper *Le Parisien*
- <http://www.controleradar.org/trafic-points-permis-conduire>

In France, and probably also in other countries where the DPS includes automatically detected violations without identification of the driver, the most simple and best known way is to “transfer” the offence to another person. Generally, these transfers are done inside the family: the mom who still has the full 12 points takes the fine and the loss of points of her son, a young driver on a probationary licence; the grandfather who does not drive anymore agrees to “pay” for his son who cannot afford to lose his licence because he needs it for his work.

This method is simple but of course illegal. In France this type of false testimony is punishable by fines up to 1,500 Euros, and a false accusation can be punished by a fine of up to 45,000 Euros and a prison sentence of up to 3 years. However, the method has been increasingly popular since the introduction of speed cameras which flash the back of the car without knowing the true identity of the violator. It is the same for violations detected with laser radars that do not take a picture.

Today, the phenomenon exceeds the boundary of the family. When looking around, it is easy to find sites on the Internet where points can be sold and bought, for example via Ebay where auctions are usually removed quickly, or on other classified sites such as Kijiji or Annonces.com. The principle is simple. At the internet, people offer their points to those who have already seriously lost their point capital. They offer to the one who was caught for speeding or for another offence to give their details, not his own, as if the vehicle had been lent out. The owner of the vehicle at fault will not have a reduction of his points and avoids following a course for points recovery. In some cases, the “seller” uses also the points of their family members, those of their grandparents for example. The sellers may be reluctant to endorse a heavy offence, such as excessive speed. In these cases prices of the points go up. In France, points are sold between 250 and 2,600 Euros, with an average price of 700 Euro. Point trafficking in France is estimated to involve a turnover of 30 million Euro per month.

9.4.2 *Legislative actions against points trafficking*

In France, point traffickers will be subject to six months of imprisonment and to fines of 15,000 Euros, and those who traffic points on a large scale, or repeatedly, or by advertising on the internet will be subject to one year imprisonment and a 30,000 Euros fine. Other penalties may be imposed in addition: suspension of the driving licence for up to 3 years, sentences of community service, day fines, mandatory traffic safety courses, etc. (Article L223-9 of the French Highway Code). It is not sure that increasing sanctions will put an end to points trafficking. Even if the penalties are more severe, it remains difficult to the judiciary to prove that there has been a matter of points trafficking. Since the demand is real and strong, an increase of the prices for points cannot be excluded. Professionalization of trafficking is to be feared as it may attract “professional” criminals.

9.5 **Conclusions**

This chapter discussed two undesirable side effects of DPS. One relates to continued driving once the driver licence has been invalidated; the other to the transferring penalty points from the violator to someone else, i.e. points trafficking. The Chapter was based on the French experience mainly, since there is hardly any scientific information about these aspects of the DPS. This is most likely due to the difficulty in studying this topic, given the illegal nature of the behaviour involved.

Unlicensed driving poses two problems to traffic safety: first, it undermines the integrity of the licensing system and the value of licence sanctions like DPS in deterring violations of the traffic laws; secondly, unlicensed drivers seem to be unsafe drivers as they are overrepresented in traffic crashes and violations; third, unlicensed drivers may be more inclined to “hit-and-run” in order to escape the sanction. Exact data are missing but the absolute size of the unlicensed driving problem seems not to be that great. For example, in France, only around 0.25% of the drivers has a licence withdrawal related to DPS; in Finland, evaluation of experts also seem to indicate that it is a small-scale phenomenon. There are indications that unlicensed driving poses a relative high accident and accident severity risk. However, those findings relate to all sorts of unlicensed driving, including driving without ever having held a licence. Whether driving after licence withdrawal in the framework of a DPS poses an increased risk is not known.

Another undesirable side effect of a DPS is points trafficking, i.e. a situation where points assigned to someone who has (almost) reached the threshold for, for example, a driver improvement course, or licence withdrawal, are transferred to someone else on payment of sometimes substantial amounts of money. Though official data is lacking, point trafficking seems to become a serious problem in countries where the DPS includes automatically detected violations without identification of the driver. In fact, this is a drawback of a generally efficient system that allows for automated detection of violations without the need to identify the driver. In France, the way to respond to this new form of delinquency by legal sanction is currently on the political agenda, as the effects of countermeasures are not yet really known.

It can be recommended that in design and implementation of DPS care is taken to include measures to prevent unlicensed driving, to relieve courts burden by appeals against license invalidation and to counter points trafficking. Measures to improve the enforcement of unlicensed driving can be based on the (increased) use of Automatic Number Plate Recognition (ANPR). Mandatory administrative pre-trials are one way of relieving courts from investing time in license invalidation appeals. Points trafficking should be defined as a special crime category which needs special police investigative attention.

9.6 References

- Klipp et al. (2012) *European Demerit Point Systems: Overview of their main features and expert opinions*. BestPoint Deliverable 1. Bergisch Gladbach, Bundessnstatlt für Strassenwesen BAST.
- Knox, D., Turner, B., Silcock, D., Beuret, K. & Metha, J. (2003) *Research into unlicensed driving: final report*. Road Safety Research Report No. 48. London, Department for Transport (DfT).
- ONISR-Observatoire National de Sécurité routière (2010). *Bilan de la sécurité routière 2010*. Paris, La Documentation Française.
- Scopatz, R.A., Hatch, C.E., DeLucia, B.H. & Tays, K.A. (2003) *Unlicensed to kill: the sequel*. Washington, D.C., American Automobile Association AAA Foundation for Traffic Safety.
- Silcock, D. Sunter, A. Lottum, C. van & Beuret, K. (1999) *Unlicensed driving: a scoping study to identify potential areas for further research*. Basingstoke, Hampshire, Automobile Association AA Foundation for Road Safety Research,
- Sweedler, B. & Stewart, K. (2007). *Unlicensed drivers: how big is the problem and what can be done about it? An international perspective*. In: Risser, R. & Nickel, W.R. (Eds.), *Fit to Drive*, Proceedings of the 2nd International Traffic Expert congress, Vienna. Bonn, Kirschbaum Verlag. Pp 57-62.

10 Possibilities for an EU harmonized DPS

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10.1 Introduction

Currently it is legally impossible to exchange information about a driver's number of points (or about committed offences) between all countries in European Union. Several driving licence networks with different Member States, a huge number of different driving licence documents as well as different national legislations impede the prosecution of traffic offences committed by foreign drivers.

One of the tasks within the BestPoint project was to analyse the framework for implementation and enforcement of DPS on an EU-wide level with the aim to overcome this barrier. The focus of this task was to research, analyse and evaluate the EU legal framework, including provisions and recommendations, to identify ways towards a future exchange of information/points on road traffic offences between Member States. On EU level different documents show the awareness of the problem and provide solutions in accordance with the principle of free movement of persons. After initial legal research a Workshop in Brussels took place on 5 December 2011. Experts from different road safety related organizations discussed potential steps towards an EU-wide DPS.

This Chapter presents the findings of the legal analysis and the workshop.

10.2 Legal Framework: primary law

Two of the main sources of European law are primary and secondary law. When looking at the possibilities of exchanging information on road traffic offences, both types have to be considered.

Primary law is created by the Member States as well as by EU institutions, and consists of the Treaty on the EU (TEU)⁸ and the Treaty on the Functioning of the EU (TFEU)⁹, as well as their annexes and protocols. In Article 5 of the TEU three general principles are laid down.

1. The principle of conferral: The EU *“shall act only within the limitations of the competences conferred upon it by the Member States in the Treaties to attain the objectives set out therein”* (Art 5 (1) TEU). The competences that are not conferred upon the Union in this way remain with the Member States.
2. The principle of subsidiarity: According to Art 5 (3) TEU, *“in areas which do not fall within the EU exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States, either at central level or at regional and local level, but can rather, by reason of the scale or effects of the proposed action, be better achieved at Union level”*.
3. The principle of proportionality: According to this principle *“the content and form of Union action shall not exceed what is necessary to achieve the objectives of the Treaties”* (Art 5 (4) TEU).

⁸ Consolidated Version of the Treaty on European Union, OJ C 83, 30.3.2010, p. 13.

⁹ Consolidated Version of the Treaty on the Functioning of the European Union, OJ C 83, 30.3.2010, p. 47.

In fields without exclusive competence of the European Union the principle of subsidiarity has to be considered, whereas the principle of conferral and the principle of proportionality always have to be considered when new legislative acts will be enacted.

Article 3 of the TFEU lists the fields where the Union has exclusive competences, for instance the Customs Union (Art 3 (1) (a)). Article 4 (2) of the TFEU contains those competences that are shared between the Union and the Member States. Among others the fields of transport and of freedom, security and justice belong to this group of shared competences. For exchanging data on offences/points the field of transport is of interest; so most road traffic related legislative acts are based on shared competence.

Finally, Articles 90 and the following of the TFEU contain more details on the shared competence in the “Transport” area, e.g. related to the legislative process. Art 91 (1) of the TFEU states that among others the European Parliament and the Council shall take measures to improve transport safety.

10.3 Legal Framework: secondary law

Secondary law includes Directives, Regulations and Decisions. As far as the topic of this Chapter is concerned, relevant secondary law consists of:

- Directive 2006/126/EC of the European Parliament and of the Council of 20 December 2006 on driving licences (Third Driving Licence Directive)¹⁰
- Directive 2011/82/EU of the European Parliament and of the Council of 25 October 2011 facilitating the cross-border exchange of information on road safety related traffic offences (Cross-Border Directive)¹¹
- Council Framework Decision 2005/214/JHA of 24 February 2005 on the application of the principle of mutual recognition to financial penalties (Framework Decision 2005)¹²
- Regulation (EC) No 561/2006 of the European Parliament and of the Council of 15 March 2006 on the harmonisation of certain social legislation relating to road transport and amending Council Regulations (EEC) No 3821/85 and (EC) No 2135/98 and repealing Council Regulation (EEC) No 3820/85 (Driving time and rest periods Regulation)¹³

In the following paragraphs, each of these four is briefly discussed.

10.3.1 Third Driving Licence Directive

The Third Driving License Directive was adopted in 2006. In essence, its legal basis is Art 71 of the Treaty establishing the European Community (TEC)¹⁴ – today’s Art 91 TFEU –, transport domain, one of the shared competences between the EU and the Member States. It contains comprehensive provisions regarding driving licenses such as the mutual recognition of licences, minimum ages, etc.

Recital 22 of the Directive refers to the principle of subsidiarity. The objectives of the Directive could not be sufficiently achieved by the Member States; given the dimensions and effects of the Directive’s objectives, they could be better achieved at Community level.

¹⁰ OJ L 403, 30.12.2006, p. 18.

¹¹ OJ L 288, 05.11.2011, p. 1.

¹² OJ L 76, 22.3.2005, p. 16.

¹³ OJ L 102, 11.4.2006, p. 1.

¹⁴ Consolidated Version of the Treaty establishing the European Community, OJ C 321 E, 29.12.2006, p. 37.

Further on, the principle of proportionality was also maintained as the Directive does not go beyond what was necessary in order to achieve the objects.

Two provisions of the Directive (namely Articles 7 and 15) are specifically interesting in the context of the BestPoint Project. In both, an “EU driving licence network” is mentioned. Article 7 (5) d) in connection with b) provides for the use of this network so that a driving licence cannot be issued twice in the EU. Article 15 (“Mutual Assistance”) also deals with the driving licence network: Member States shall exchange information on the licences they have issued, exchanged, replaced, renewed or revoked. They shall use the EU driving licence network set up for these purposes, once it is operational. This system is named RESPER (RÉSau PERmis de conduire) and will be operable in January 2013.

10.3.2 Cross-Border Directive

The European Commission presented the first proposal for the Cross-Border Directive in 2008¹⁵. However, a number of Member States doubted whether the legal basis chosen by the Commission was appropriate and even a Community competence¹⁶. Originally, the Directive was planned to be built up on top of the transport competence, but later on the legal basis was changed to Art 87 (2) TFEU, part of the police cooperation, as well as some amendments were made. This means that Ireland and the United Kingdom can decide whether they want to participate in this measure. The Directive was enacted on 25 October 2011, got into force on 6 November 2011 and the Member States will have to bring into force the laws, regulations and administrative provisions accordant to this Directive by 7 November 2013.

According to Article 1 of the Cross-Border Directive its aim is “*to ensure a high level of protection for all road users in the Union by facilitating the cross-border exchange of information on road safety related traffic offences and thereby the enforcement of sanctions, where those offences are committed with a vehicle registered in a Member State other than the Member State where the offence took place*”. The Directive applies to the following road safety related traffic offences (Art 2): speeding, non-use of a seat-belt, failing to stop at a red traffic light, drink driving, driving under the influence of drugs, failing to wear a safety helmet, use of a forbidden lane, illegally using a mobile telephone or any other communication devices while driving. Article 3 (d) – (k) includes a detailed description of these offences, enabling Member States to subsume the national offences under the Article 2 offences.

According to the Directive, Member States have to prosecute the offences according to their national law. However, they have to name a national contact point to provide cross-border data exchange of the Article 2 offences and allow other Member States’ national contact points to access and conduct automated searches on data relating to vehicles and owners or holders of a vehicle¹⁷. It remains for every single Member State to decide whether it wants to take action against a foreign driver that committed an offence on its territory. If a Member State does take action, it has to formally inform the owner, the holder of the vehicle or the otherwise identified person suspected of committing the road safety related traffic offence. Moreover, this information has to include the possible legal consequences of the country of offence. According to Article 5 (3), the information letter has to be sent “*in the language of*

¹⁵ Proposal for a Directive of the European Parliament and of the Council facilitating cross-border enforcement in the field of road safety, COM (2008) 151 final, 2008/0062 (COD), 19.3.2008.

¹⁶ 2895th Council meeting, Transport, Telecommunications and Energy, Luxembourg, 9 and 10 October 2008, Press Release PRES/08/276, p. 6, and 3052nd Council meeting, Transport, Telecommunications and Energy, Brussels, 2-3 December 2010, Press Release PRES/10/326, p. 9 et seq.

¹⁷ Details regarding the conduct of the search can be found in Decision 2008/616/JHA, Chapter 3 of the Annex as well as in Annex I to the Cross-Border Directive. For details see Art 4 (2) second paragraph Cross-Border Directive.

the registration document, if available, or in one of the official languages of the Member State of registration”.

To enable the exchange of information the Member States should use existing software applications, according to recital 10 of the Directive. The Directive especially names the software application of the European Vehicle and Driving Licence Information System (Eucaris). This software is mandatory for Member States to exchange specific vehicle registration data under the so called Prüm Decisions¹⁸.

In 2004, the European Commission had adopted a *Recommendation on enforcement in the field of road safety*¹⁹ which contained recommended practices for enforcement in relation to three main offences, namely speeding, drink-driving and non-use of seat belts. Among other things the Commission recommended that Member States provide procedures assuring that all speed violations registered by automated speed enforcement equipment are followed up. The Commission also recommended the application of random breath testing with alcohol screening devices, and the use of evidential breath test devices.

One of the most important recommendations in relation to cross-border enforcement was that Member States should ensure that serious or repeated offences threatening road safety committed by a non-resident driver are reported to the competent authorities of the Member State where the vehicle is registered, using an enforcement coordination point which should be appointed by every Member State. Since the Recommendation, being a non-binding instrument, turned out to be inappropriate to achieve the aim of cutting back road deaths by half, the Commission made its proposal for a Directive facilitating cross-border enforcement in the field of road safety.

10.3.3 Framework Decision 2005

The legal basis for the Framework Decision 2005 is Article 31 (1) (a) and Article 34 (2) (b) of the TEU²⁰, today's Articles 82 and 83 of the TFEU, the “Judicial Cooperation in Criminal Matters”, governing the “Area of Freedom, Security and Justice”. It is one of the shared competences between the EU and the Member States according to Article 4 of the TFEU. This Decision is applicable if an offender does not pay a fine and a final decision of the country of offence was taken obliging him to do so. If such offences are punishable in the country of offence (issuing state), they have to be recognized and enforced in the country of residence. This even applies when the committed offence would normally not lead to these consequences in the country of residence (Art 5 (1)). The Decision had to be incorporated into national law before 22 March 2007 by the EU Member States (Art 20 (1)). However, on 1 August 2010 several countries (Belgium, Greece, Ireland, Italy and Slovakia) still had not done so.

According to the Framework Decision every Member State has to determine a national authority that is competent according to the Framework Decision (Art 2 (1)). The Decision makes it possible that all imposed financial fines from € 70 onwards, issued by one Member State, have to be mutually recognized and enforced. For that purpose the Member States have to use a certain certificate; the standard form²¹ has to be translated into the official language or one of the official languages of the executing state (country of residence). As stated in Art 9 (1) of the Framework Decision, the enforcement of such a decision from

¹⁸ Council Decision 2008/616/JHA of 23 June 2008 on the implementation of Decision 2008/615/JHA on the stepping up of cross-border cooperation, particularly in combating terrorism and cross-border crime, OJ L 210, 6.8.2008, p. 12.

¹⁹ Commission Recommendation of 6 April 2004 on enforcement in the field of road safety, OJ L 111, 17.4.2004, p. 75.

²⁰ Consolidated Version of the Treaty on European Union, OJ C 321, 24.12.2002, p. 1.

²¹ See Annex of the Framework Decision

another country shall be governed by the law of the executing State in the same way as a financial penalty of the executing state. In this case, a decision refers to a final decision requiring a financial penalty to be paid by a natural or legal person (Art 1 (a)). In addition, it remains to the authorities of the executing state to decide on the enforcement procedures and to determine all relating measures, including the reasons for termination of prosecution. The issuing state is not involved in the execution (Art 15 (1)). The executing state has to execute a decision when it is one of the offences named in Art 5 (1) of the Decision (Art 6).

The major difference between the Framework Decision and the Cross-Border Directive is that the latter applies before a final sanction has been imposed. Apart from that, the Framework Decision has a broader scope. Not only traffic offences are covered, but also terrorism, theft, and many more (39 offences).

10.3.4 Driving time and rest periods Regulation

Mainly based on Article 91 of the TFEU (former Art 71 of the Treaty establishing the European Community), the driving time and rest period Regulation governs driving times, breaks and rest periods that have to be taken by drivers of goods or passenger transport vehicles in order to harmonize the conditions of competition between modes of inland transport. Monitoring and enforcement practices by Member States are included too.

Although the common road safety related offences (speeding, drink-driving, etc.) are not included, this regulation is of interest in relation to a EU harmonized DPS, because it contains provisions for cross-border enforcement. Art 19 (2) obliges the Member States to enable the competent authorities to impose penalties on companies and/or drivers for infringements of the Regulation detected on their territory and for which a penalty has not already been imposed. This even applies when the infringement was committed on the territory of another Member State or a third country.

Although this provision is different as it applies to the enforcement of the EU's Social Legislation in the professional transport sector, it introduces an exception to the principle of territoriality. This principle states that an infringement can only be prosecuted on the territory of the country where the infringement was committed. This provision can also be relevant for the implementation of a system for the cross-border exchange of information between Member States.

10.3.5 Additional relevant documents

In addition to the above described binding legal documents, there are several other documents, from different EU institutions, that express the intention for future cross-border exchange of information on road-traffic. For example, in 2010 the Council called for "*the exchange of information in the field of cross-border enforcement of road safety related traffic offences applying, as far as possible, existing systems of information exchange*" and it invited the Commission "*to examine possibilities to harmonize traffic rules at EU level where appropriate*"²². In its "Policy orientations on road safety 2011-2020" the Commission considered the increase of enforcement of road rules as a key factor in creating conditions for a considerable reduction in the number of accidents. Moreover, the Commission considered cross-border exchange of information in the field of road safety as well as enforcement campaigns, national enforcement objectives, etc. to be important. Because of

²² Report from the General Secretariat of the Council to the Council; Subject: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: "Towards a European road safety area: policy orientations on road safety 2011-2020" (16951/10), p. 5 and 6.

this the Commission intended to work together with the European Parliament and the Council on the establishment of a cross-border exchange of information in the field of road safety and will work on developing a common road safety enforcement strategy²³.

10.4 Current cross-border exchange of points

Several Member States of the European Union – such as the United Kingdom, Ireland and Northern Ireland, as well as Austria and Germany – already have multi- or bilateral agreements for an exchange of information on road traffic offences. These Member States exchange points because of the large amount of cross-border traffic between the countries. In these cases, a driving ban in the country of offence can already have consequences in the country of residence. E.g. when Malta withdraws the licence of a British driver, it will transfer it to British authorities and this might have consequences in the United Kingdom: in case of accumulated points insurance premiums can be increased as well as car rental may be impossible. Another possibility to register foreign drivers is the implementation of a virtual local licence (introduced so in the United Kingdom and Luxembourg). In this system a virtual local licence is created for every non-resident violator stopped for the first time to make sure that the same rules and procedures are applied to resident and non-resident drivers²⁴.

Because in many countries it is impossible to forward points to the state of residence, it is common that the police withdraw and suspend driving licences of drivers who committed a road traffic offence. They will then send the licence back to the country of residence where the driver can get it back.

According to Art 3 of the Council Act of 29 May 2000, established in accordance with Article 34 of the Treaty on European Union on Mutual Assistance in Criminal Matters between the Member States of the European Union²⁵, the participating countries have to assist each other also in administrative penal cases, such as the transmission of photographs to foreign authorities for identification of drivers. All Member States of the EU are contract parties to this Convention – except Greece, Italy and Ireland.

10.5 Considerations for an EU-wide system for exchange of road traffic offences

The exchange of information about road traffic offences between EU Member States is an essential condition when heading towards an EU-wide DPS. However, in that respect, there are many relevant aspects that need to be considered. This paragraph gives an overview of the main considerations, namely those related to the offences to be included in an EU DPS, data protection issues, and who is responsible of data collection and transfer.

10.5.1 Offences to be included in an EU-wide system

The easiest and least invasive way of exchanging “points” on traffic offences committed in other Member States would be a simple exchange of information on committed traffic offences, so that the countries of residence could start with the voluntary prosecution of the offenders according to their national law.

²³ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, entitled “Towards a European road safety area: policy orientations on road safety 2011-2020”, COM (2010) 389, p. 6 and 7.

²⁴ European Commission, CAPTIVE – Common Application of Transport Violations Enforcement, Final Report November 2006.

²⁵ Council Act of 29 May 2000 establishing in accordance with Article 34 of the Treaty on European Union the Convention on Mutual Assistance in Criminal Matters between the Member States of the European Union, OJ C 197, 12.7.2000, p. 1.

An EU-wide system for the exchange of information on road safety related offences would – in its beginning – not only be necessary to inform the country of residence, but would also have to provide the country of offence with information about previously committed offences. Further on such a system would need to work online so that new information is available immediately, also for the police out in the street.

In addition to the offences included in the Cross-Border Directive an EU-wide DPS should also include driving/resting times²⁶. Major advantages of one EU DPS would be the deterrence effect as well as the equality effect of points as opposed to fines (all EU citizens shall be treated equally – the calculation of financial penalties differs in the Member States, e.g. in some countries people get fines according to their salaries).

If there is a list of certain offences on which information is exchanged (speeding, drink-driving, etc.), the description has to be sufficiently detailed. Art 3 of the Cross-Border Directive already contains such descriptions; they could be used therefor.

As long as there is not a single DPS within the EU, a correlation table for points and offences between countries could be a solution to ensure that all European offenders are treated equally.

Concerning professional drivers, employers may be informed about their employees' points, e.g. by a special clause in the contract of employment (approval of the employee to provide the employer with such information or to grant the employer access to the relevant register). They may automatically be informed by the authorities. It could be considered to make employers liable for their drivers and, if they don't monitor their employers sufficiently (risk management), to withdraw their commercial license. Employers of professional drivers could also be granted access to the relevant information in a DPS.

10.5.2 Data protection

Talking about such an EU-wide system, data protection must not be forgotten. Existing legal documents related to the current topic already include such provisions. For instance Article 7 of the Cross-Border Directive provides that the provisions on data protection set out in Framework Decision 2008/977/JHA²⁷ apply to the personal data processed under the directive. This Decision only applies to the *“processing of personal data in the framework of police and judicial cooperation in criminal matters, provided for by Title VI of the Treaty on European Union”* (Art 1 (1)). But since the Commission wants another legal background for a system of exchange of information on road traffic related offences/points, Decision 2008/977/JHA won't be applicable. But there does exist another important Directive, 95/46/EC²⁸, including minimal standards for data protection, which had to be incorporated into national law by the Member States. Exempted from the scope of that Directive are activities of the Member States in areas of criminal law. However, it does apply to general administrative law, like traffic law. Hence, the relevant provisions of the Directive would have to be considered when implementing a DPS. This means that Member States have to ensure that personal data are *“processed fairly and lawfully; collected for specified, explicit and legitimate purposes (...)”* as well as in accordance with other requirements (Art 6 (1)). Article 7 lays down criteria for legitimizing data processing, like the need to comply with a legal obligation (Art 7 (c)), as well as the need *“for the performance of a task carried out in the*

²⁶ Driving time and rest periods regulation – see above.

²⁷ Council Framework Decision 2008/977/JHA of 27 November 2008 on the protection of personal data processed in the framework of police and judicial cooperation in criminal matters, OJ L 350, 30.12.2008, p. 60.

²⁸ Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, OJ L 281, 23.11.1995, p. 31.

public interest or in the exercise of official authority vested in the controller or in a third party to whom the data are disclosed” (Art 7 (e)). It also includes the right of access, according to which the Member States have to provide concerned persons with certain information. In this context it must be mentioned that the Commission planned a comprehensive reform of the existing data protection rules, which shall improve and extend the rights of concerned individuals. It shall enter into force 2014 and the new regulations will have to be considered when establishing an EU DPS²⁹.

10.5.3 Data collection and provision of information

It will be important to have one competent authority in every Member State that gathers the information, processes it and is responsible for the protection of information.

As stated in Art 7 (3) of the Cross-Border Directive the concerned drivers should have the opportunity to know who was responsible for a data set entry and, beyond that, have the opportunity to get informed about the ways to reduce the number of registered points.

10.6 Towards an EU-wide DPS

10.6.1 Possible ways of implementing an EU DPS

For the implementation of an EU DPS, a change of the European Union law will be necessary. The three most suitable opportunities for this in the near future, are:

- The Commission intends to modify some annexes of the 3rd Driving Licence Directive (e.g. medical fitness to drive)³⁰. This possibility could be used to also change this Directive for the implementation of a system of information exchange. Either its annexes could be changed, or alternatively, there could be an amendment of the entire Directive or a new Art 15. Because Art 7 (5) letter d only refers to the double issuance of driving licences, the more appropriate legal basis seems to be Art 15. But also this provision would have to be changed because Art 15 only refers to the provisions of the Directive regarding information on the issued licences and not on committed offences. Just an amendment of the annexes would not be sufficient for an adequate legal basis to use RESPER also for the exchange of points/information on committed offences.
- The Cross-Border Directive includes a revision clause stating that by 7 November 2016 the Commission will submit a report to the European Parliament and to the Council on the application of the Directive by the Member States (Art 11). The Directive could be extended to non-financial legal consequences.
- It is planned to revise the Council Framework Decision which will possibly be turned into a Directive. This amendment could be used for the implementation of an EU DPS.

10.6.2 Introduction in five steps

Thinking about the introduction of an “EU DPS” a short-term version as well as a medium or long time-version will be needed. The following five steps were developed during an expert workshop in Brussels in December 2011 that was attended by European policy makers, national police, and experts from road traffic organisations. Though not the only possible solution, they can serve as a template of a gradual approach towards a full European DPS.

²⁹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Safeguarding Privacy in a Connected World A European Data Protection Framework for the 21st Century, COM (2012) 09 final.

³⁰ Directive 2006/126/EF – see above.

1. As a first step only information on (certain) offences between Member States is exchanged. Either all offences or just the most important ones will be forwarded by the country of offence to the country of residence. For this purpose a driving licence network has to be used.
Member States that already have a DPS in place assign points to their citizens who committed road traffic related offences abroad using their own DPS with its sanctions. The offenders are treated as if the offence was committed within their own country. According to national laws a prerequisite for such a system would be the legal possibility. The Driving and Resting Times Regulation could serve as an example for that concerning the territoriality principle³¹.
The country of residence needs to be informed in detail about the committed offence to compare them with their own categories of offences. For this purpose the description of the offences in the Cross-Border Directive could be used (Art 3).
2. As a second step the Commission would recommend that all countries adopt a DPS, referring to the BestPoint guidelines for the implementation of a maximally effective DPS. Arguments for the need of exchange of information can be found in the Cross-Border Directive, e.g. the effectiveness of the investigation of road safety related traffic offences. Beyond that, especially the deterrence effect, the fairness aspect and the aspect of the equity of the system (all EU citizens shall be treated equally) have to be mentioned.
3. Thirdly, authorities create a virtual national driving licence for every non-resident violator stopped for the first time. So the foreign driver can be treated equally to a resident driver and points can be assigned. Some countries have already implemented such a system like the UK and Luxembourg. Their experiences can be used to create such a system.
4. Fourth, every country has to have a DPS which includes a minimum list of offences. But it remains to the Member States to decide how many points for the different offences are registered. Because of the different national provisions a conversion table for every country is needed to allow for some kind of points exchange.
5. As the fifth and final step, there is one single and binding DPS at EU level for all Member States as a long-term scenario. At this step also intermediate measures (such as driver improvement courses) have to be implemented by all countries.

10.6.3 Additional aspects concerning an EU DPS

Regardless of the above mentioned points there are several other important aspects that have to be clarified. They include:

- Do all Member States have to implement the steps at the same time or shall the date of implementation be left up to them?
- The problem of double counting: Shall the system allow or even foresee punishment and/or the registration of points in the country of offence and in the country of residence?
- One further problem that occurs especially with speeding offences (but also with drink-driving) is the different limits within the Member States that impede the implementation of DPS.
- How shall offenders be informed about the level of points they have collected?
According to Article 7 (3) of the Cross-Border Directive “*any person concerned shall have the right to obtain information on which personal data recorded in the Member State of registration were transmitted to the Member State of the offence, including the date of the request and the competent authority of the Member State of offence*”. In any case the enforcement authorities of the different countries have to be informed. Hence, when implementing the above listed step 3, the country of offence should inform the drivers in a notification letter. According to Article 8 (2) of the Cross-Border Directive

³¹ Driving time and rest periods Regulation, see 10.3.4.

Member States shall provide road users with the necessary information about the rules applicable in their territory. When some kind of an EU DPS is implemented there should be a similar regulation to ensure better awareness and better compliance with the DPS.

- Even if there is one single binding DPS for all Member States, what about the consequences? Will the EU DPS also include binding consequences for certain amounts of points or will the countries be free to implement different systems?
- What offences shall be included in an EU DPS? Just the most important ones such as speeding, alcohol and drugs, non-use of seatbelts and other restraining systems, red light crossing, distraction (use of mobile phones) as well as driving and resting hours? For a short-term version of a future system on the exchange of information on traffic related offences, at least the “three main killers” should be included: speeding, drink driving and non-use of seatbelts.
- DPS could be linked with insurance costs: the more points gathered, the more expensive the insurance premiums get. This measure would force the offenders even more to comply with the road traffic regulations and would consider high risk driving. Of course the insurance companies would have to get access to the relevant information, either by access to the relevant network directly or by disclosure of the needed information by the individual (any accident, any points lost/gathered).
- The DPS could include – like in Germany – special (stricter) conditions for novice drivers.

10.7 Conclusions and recommendations

The existing legal framework already includes important elements and incentives for the introduction of an EU DPS. At the same time it shows the necessity of further action in order to improve road safety in a system where the freedom of movement is one of the most important principles but where road traffic offences and their sanctioning are largely still left up to the single Member States.

- Because of different legal situations in the Member States – different kinds of offences, different types of DPS and even countries without DPS – a gradual approach towards an EU DPS is recommended.
- The system for an exchange of information on offences/points could be implemented via the Third Driving Licence Directive by amending Article 15 or by implementing a new Article. Depending on type and extent of a future EU-wide DPS, today’s framework consisting of the Cross Border Directive, Framework Decision 2005 and the Third Driving Licence Directive could either be maintained or would have to be modified. The planned network RESPER (or a future version thereof) could be used as the network for the exchange of committed offences/points. Such a system would have to work online in order to make information is available in real time, also for the police out in the street.
- With the introduction of one EU DPS the problem of the different legal settings in the different Member States occurs. So either a binding correlation table were to be established or the relevant offences would have to be harmonized. The Cross-Border Directive already provides the required action of the Member States “*in order to ensure greater convergence of road traffic rules and of their enforcement between Member States*”, recital 15. Further on in its conclusions of 2010 the Council invited the Commission “*to examine possibilities to harmonize traffic rules at EU level where appropriate*”.
- Which offences shall be included in a DPS or system of exchange of information on committed offences? By all means, the offences mentioned in the Cross Border Directive should be included and further on be harmonized as they are of great importance for road safety. As described in Article 3 of the Cross-Border Directive an EU DPS should also include a detailed definition of the appointed offences – especially as long as they are not harmonized – to ensure a fair and equal treatment of all offenders within the EU.

- In the both owner and driver liability are applied. With regard of the above mentioned measures driver liability should be introduced by all Member States e.g. by forcing the owner to name the person who drove the car at the time of the offence.
- Offenders will have the right to get informed about the level of points they have collected, either automatically as per Article 5 (3) of the Cross-Border Directive or on request to the responsible authorities in the Member States in the language of the registration document, if possible, or in one of the official languages of the Member State of registration.
- To ensure a well-functioning system it needs to be evaluated on a regular basis, as per Article 11 of the Cross-Border Directive, stating that the Commission has to report to the European Parliament and the Council about the application of the Directive by the Member States. According to Article 6 of the Directive the Member States themselves have to give to the Commission a comprehensive report regarding that topic.
- When introducing an EU-wide DPS, the guiding philosophy, especially the equality effect has to be communicated together with information on the safety aspects of offences.
- An important factor in relation to data exchange is data protection. Just like Article 7 of the Cross-Border Directive and Articles 25 and 30 of the Council Decision 2008/615/JHA (part of the Prüm Decisions), the regulation of an EU DPS will have to guarantee a high level of protection of personal data.
- To complete such a system, the same mandatory intermediate and rehabilitation measures will have to be implemented by all countries.

10.8 References

Commission Recommendation of 6 April 2004 on enforcement in the field of road safety, OJ L 111, 17.4.2004, p. 75.

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, entitled "Towards a European road safety area: policy orientations on road safety 2011-2020", COM (2010) 389.

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Safeguarding Privacy in a Connected World A European Data Protection Framework for the 21st Century, COM (2012) 09 final.

Consolidated Version of the Treaty establishing the European Community, OJ C 321, 29.12.2006, p. 37.

Consolidated Version of the Treaty on European Union, OJ C 83, 30.3.2010, p. 13.

Consolidated Version of the Treaty on European Union, OJ C 325, 24.12.2002, p. 5.

Consolidated Version of the Treaty on the Functioning of the European Union, OJ C 83, 30.3.2010, p. 47.

Council Act of 29 May 2000 establishing in accordance with Article 34 of the Treaty on European Union the Convention on Mutual Assistance in Criminal Matters between the Member States of the European Union, OJ C 197, 12.7.2000, p. 1.

Council Decision 2008/615/JHA of 23 June 2008 on the stepping up of cross-border cooperation, particularly in combating terrorism and cross-border crime, OJ L 210, 6.8.2008, p. 1.

Council Decision 2008/616/JHA of 23 June 2008 on the implementation of Decision 2008/615/JHA on the stepping up of cross-border cooperation, particularly in combating terrorism and cross-border crime, OJ L 210, 6.8.2008, p. 12.

Council Framework Decision 2005/214/JHA of 24 February 2005 on the application of the principle of mutual recognition to financial penalties, OJ L 76, 22.3.2005, p. 16.

Council Framework Decision 2008/977/JHA of 27 November 2008 on the protection of personal data processed in the framework of police and judicial cooperation in criminal matters, OJ L 350, 30.12.2008, p. 60.

Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, OJ L 281, 23.11.1995, p. 31.

Directive 2006/126/EC of the European Parliament and of the Council of 20 December 2006 on driving licences, OJ L 403, 30.12.2006, p. 18.

Directive 2011/82/EU of the European Parliament and of the Council of 25 October 2011 facilitating the cross-border exchange of information on road safety related traffic offences, OJ L 288, 05.11.2011, p. 1.

Haratsch, A., Koenig, C., Pechstein, M. (2010), *Europarecht*.

Proposal for a Directive of the European Parliament and of the Council facilitating cross-border enforcement in the field of road safety, COM (2008) 151 final, 2008/0062 (COD), 19.3.2008.

Regulation (EC) No 561/2006 of the European Parliament and of the Council of 15 March 2006 on the harmonisation of certain social legislation relating to road transport and amending Council Regulations (EEC) No 3821/85 and (EC) No 2135/98 and repealing Council Regulation (EEC) No 3820/85, OJ L 102, 11.4.2006, p. 1.

Report from the General Secretariat of the Council to the Council; Subject: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: "Towards a European road safety area: policy orientations on road safety 2011-2020" (16951/10).
<http://register.consilium.europa.eu/pdf/en/10/st16/st16951.en10.pdf>.

Wilson et al. (2006), CAPTIVE – Common Application of Transport Violations Enforcement, Final Report, European Commission.

2895th Council meeting, Transport, Telecommunications and Energy, Luxembourg, 9 and 10 October 2008; Press Release PRES/08/276.

3052nd Council meeting, Transport, Telecommunications and Energy, Brussels, 2-3 December 2010, Press Release PRES/10/326.

11 Overview and conclusions: towards recommendable practices

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11.1 Introduction

A Demerit Point System (DPS) issues penalty or demerit points to drivers or owner of vehicles after a driver or vehicle has been identified in a traffic offence. The aim of a DPS is to deter drivers from re-offending in traffic and to increase road safety by using the threat of extra measures, most often extra sanctions, in addition to regular sanctions if collected points exceed certain limits. Typically licence withdrawal is the final sanction if too many points have been issued in a limited time span.

In recent years, a DPS has been implemented in an increasing number of countries. Today 21 out of 27 EU Member States have a DPS. Also several countries outside Europe apply a DPS: in Australia all states and territories have a DPS; in Canada all provinces and one of the three territories have a DPS; and in the USA 42 of the 51 states have a DPS.

Theoretically, a DPS can achieve an effect on road safety by three mechanisms: prevention, correction, and selection. If road users start to drive more safely because they have seen, heard, read or talked about the point system, or because they have already collected some points, this can be called *prevention*. General prevention can be described as the impact of the threat of legal punishment on the public at large. Specific prevention can be seen as the impact of actual legal punishment on those who have been apprehended. A DPS can have a *corrective* effect if drivers are influenced to drive more safely, e.g. by improving attitude and skills through a driver improvement course. Finally, if a DPS *selects* and removes from (motorised) traffic those road users who often commit violations, before they have actually caused a crash (or yet another one), this will benefit road safety.

Though the overall principles are the same, the exact features and operation of the DPS largely vary among countries. The BestPoint project aimed to identify, based on scientific evidence, psychological theories, and expert opinions and considerations, those features of a DPS that would result in the best possible effect. The previous chapters of this Deliverable summarised the findings. Based on that, this chapter takes a final look on what has been learned about DPS and what conclusions can be formulated concerning recommendable practices. In this respect, it must be noted that the amount of sound empirical scientific studies in the DPS area is limited and that many of the recommended practices follow from relevant theoretical considerations rather than from solid empirical evidence. For example, various studies have studied the overall effect of the DPS, but in many of these studies it is impossible to separate the effect of the DPS as such from the effects of increased enforcement, publicity, or law changes that often accompany the introduction of a DPS. Empirical studies comparing the differential effect of specific, individual features of a DPS are missing altogether because it is practically almost impossible to design such studies in a scientific sound way.

The current Chapter summarizes the findings in the areas of the design of the DPS (Section 11.3 on offences, points, and target groups) and the support measures (Section 11.4 on enforcement, intermediate and rehabilitation measures, and organizational and administrative issues). Section 11.5 closes the chapter with an outlook on possible and desirable future developments related to DPSs in Europe. The next Section briefly summarises the findings about the overall safety effects of current DPS as well as some less desirable side effects.

The findings in this Deliverable, together with the information in the first BestPoint Deliverable feed into the 3rd and final Deliverable of this project: the BestPoint Handbook.

11.2 Safety outcomes and other outcomes

11.2.1 Safety effects

As described in Chapter 8, studies in specific countries have reported positive effects that typically lasted between 6 and 24 months. A recent meta-analysis on the safety effects of point systems – published after chapter 8 was finished – basically confirmed the conclusions of this chapter (Castillo-Manzano & Castro-Nunõ, 2012). The meta-analysis showed that the strong initial positive impact - 15 to 20% reductions in accidents, fatalities and injuries - seems to wear off in under eighteen months. Thus, based on the existing literature, there is no convincing evidence that any of the existing DPS is particularly effective in improving general road safety in the long run. A basic problem for research is that the effect of DPS is frequently mixed with effects of coinciding changes in legislation and enforcement; it is often practically impossible to show how much of the total effect can be attributed to DPS. However, there is evidence that a DPS can have specific preventive effects, i.e. effects on the violation behaviour of the limited group of drivers who have collected points (see Chapter 8).

There may be various reasons why long term effects have not yet been found. First, and likely most important, the short duration of the positive effect may be due to the lower than desirable level of enforcement. If for example camera detected offences are not included in DPS, the chance of detection is quite low. Second, the communication about the point system and traffic policing may fall short on national, regional, or personal levels. If communication is not quick and clear, road users may be uncertain about possible outcomes and may be insufficiently motivated to change behaviour. Finally, long term behaviour change is difficult, especially for drivers with tendencies towards driving anger, impulsiveness, or sensation seeking.

In summary, it seems unlikely that all desirable features have been fully exploited in the existing DPSs. Therefore the safety effects reported in evaluation studies may have been smaller than expected. In cases where large positive initial effects were reported, the study did not necessarily take into account all confounding factors, such as coinciding changes in legislation, enforcement or media attention. The safety effects of DPSs may show better and longer lasting results if current knowledge is taken sufficiently into account.

11.2.2 Undesirable side effects

As described in Chapter 9, there are two undesirable side effects of a DPS that merit further understanding and research: driving while being disqualified and fraud by point trafficking.

Continued driving while disqualified, i.e. unlicensed driving, undermines the integrity of the licensing system and the value of licence withdrawal in deterring traffic violations. In addition, unlicensed drivers have found to be unsafe drivers as they are overrepresented in traffic crashes and violations. The size of the problem of unlicensed driving varies from one EU country to the other, but all EU countries are confronted with this problem. Finally, to be clear, unlicensed driving is a problem of all licence withdrawal measures, not only those related to a DPS.

In addition there is the possibility that repeat offenders think they can avoid negative outcomes by transferring their points to another person. This points trafficking occurs especially in countries where the DPS includes automatically detected violations without identification of the driver. Official data about the prevalence of points trafficking and the amount of money involved is missing, but it is a problem that cannot be denied.

Both illegal behaviours, unlicensed driving and point trafficking, can be expected to affect the deterrent effect of a DPS since frequent and dangerous offenders may feel that they can outsmart the system and continue driving. Therefore, anti-fraud policies should be reviewed as part of the initial design of DPS.

11.3 Designing DPS

When designing a DPS, decisions need to be made about issues like the offences to be included and the number of points involved, and about the groups of road users to be targeted by the DPS

It is quite natural that the design of DPS is very much oriented to existing procedures and sanctions that intend to prevent traffic offences or to correct violation behaviour. It is to be expected however that despite DPS operations some road users may persist in offending and have their licence suspended once or more. It should not be forgotten that the design of a DPS should also pay major attention to possible improvements to the existing procedures of re-granting licences to repeat offenders and repeat licence losers. The basic principle here should be that re-granting a licence is based on a serious examination whether previous behavioural, psychological or medical problems have been solved, reduced or controlled. If doubt about this still persists, then some type of monitoring measure may be considered as part of a new or improved re-granting procedure.

11.3.1 Offences and points

In the EU, and worldwide, many different variations of DPSs exist. The common characteristic is the suspension of the licence as the consequence of reaching the allowed limit. As has been described in Chapter 3, DPSs generally differ according to the offences included, the link between types of offences and number of points ('consideration of severity'), the link between number of points and intermediate measures, and the lifetime of points.

With regard to *offences to be included* in a DPS, general road safety theory shows us that road users should follow the traffic rules so that they can anticipate behaviour of others and thereby safely regulate their own traffic behaviour. Therefore, traffic rule offences are often associated with increased crash risk. Especially for speeding and alcohol use, there is clear evidence for offence-risk relationship. Research also shows a positive association between traffic offences in general and crash involvement, although this relationship is often moderate. Enforcement and punishment should be primarily directed at violations with increased crash risk.

The following violations should be certainly included in a DPS based on both link to crash risk or injury risk to self or others and based on recommendations from experts:

- speeding,
- driving under the influence of alcohol or drugs,
- seat belt wearing, helmet wearing, and proper use of child restraints,
- red light running,
- priority violations,

- dangerous overtaking,
- headway violations
- wrong way driving and use of forbidden lanes,
- illegal cell phone use while driving,
- offences at pedestrian or railway crossings,
- Hit and run – and other dangerous post-accident misbehaviour

Additional offences may be considered where there is a particular road safety problem within a country. Member States may also include “formal” offences such as driving without a valid insurance or licence.

The next question relates to *linking offences to points*. Here it is important to keep in mind that a DPS must be fairly simple and understandable. That would mean that it is preferable to have a fixed number of points for most offences. For a very limited number of offences, in particular for speeding and alcohol offences, points can be assigned in agreement with the severity of the violation of the limit, for example three or four levels of points. For these two types of violations, the relationship between offending and crash risk for these two violations has been well confirmed in case-control research enabling a more refined way of allocating points according to risk. For a number of other offences, such as red light running, time headway, wrong way driving, two levels of severity may be distinguished.

A specific psychological theory about decision making is relevant for the question whether points should be added from zero to a maximum or deducted from a maximum to zero. This is the prospect theory of Kahneman and Tversky (1979). This theory presents the principle of *loss aversion* that refers to people's tendency to prefer avoiding losses to acquiring gains. Some studies suggest that losses are twice as powerful, psychologically, as gains. This would mean that a DPS that deducts points from a maximum fixed number should motivate offenders more strongly than a system that allocates points starting from zero. Nevertheless, this detail seems to be of lesser importance for the well-working of a DPS, as long as its basic functioning and the counting mechanisms are clearly explained and communicated.

A DPS is often just associated with punishment. However, both general psychology and the theory of operant conditioning show us that a combination of rewards and punishment works better than punishment alone. From this general principle it can be concluded that DPS work better if rewards are part of the system. One of the conclusions of Chapter 3 is that point systems should be designed so that points are remitted after a certain period of offence-free driving. In this respect, one single simple mechanism is proposed to enable offenders to improve their point record to the original level: *adjustment of points by time*. For example, if, as recommended above, points count down to zero, it may be proposed that a driver gets back his first point after a fairly short period of offence-free driving, e.g. three months after the offence. For regaining further points, longer periods would be required.

And, finally, there is the important question of how to *link intermediate measures to number of points* or, in other words, at what point levels to take actions such as sending out an information or warning letter, when to invite them or force them to participate in a driver improvement course, and, finally, when to disqualify a driver? In this respect, Chapter 3 concludes that:

- There should be a driver improvement course after no more than two severe offences in a specific time frame.
- There should be at least one severe offence between a driver improvement course and subsequent disqualification.
- Attending a driver improvement course may result in recovery of some but certainly not all points.

Of course, these recommendations presume that it is known which type of driver improvement courses have proven their effectiveness in reducing re-offending.

11.3.2 Target groups

Chapter 4 reviewed facts and opinions in order to answer the question whether there are particular groups of road users that require different treatment in a DPS. Here we discuss the group of novice drivers and professional drivers in somewhat more detail and briefly touch on other potential target groups

Novice drivers have a much higher risk of getting involved in an accident than the average driver. As concluded in Chapter 4, they are less skilled in operational and tactical traffic behaviour due to lack of experience, are more likely to take risks in traffic, have worse than average capability of rightly estimating traffic risks, and are more exposed to dangerous traffic conditions (e.g. night time driving). For all of these reasons the link between violations and crashes is even stronger for novice drivers than for the average drivers and this is the main argument to have special DPS regulations for this group. Malta and the Netherlands have a DPS that only includes novice drivers. Many other countries have different intermediate measures and different, stricter disqualification levels for novice drivers.

Both scientific evidence and expert opinions clearly indicate that novice drivers should receive particular treatment. Both general as well as special prevention effects should be reinforced by applying lower thresholds for intermediate measures and disqualification for novice drivers. For two offences, speeding and driving under the influence of alcohol, thresholds for considering them in a DPS should be lower for novice drivers. The reason is that the inexperienced novice drivers have an increased crash risk at lower levels of alcohol use or speeding than the average driver. There is no support for adjusting the duration of disqualification for novice drivers.

Professional drivers differ from the average driver in a number of ways. First, of course, professional drivers have an extremely high mileage which may be up to ten times the mileage of an average car driver. In addition, bus, taxi and truck drivers have a higher responsibility in traffic because they carry (many) people or dangerous goods. Truck and bus drivers, in addition, have a high responsibility due to the destructive impact of their high mass vehicle. Moreover, they have to follow a much higher number of rules, e.g. rules on transport of dangerous goods, rules on cargo securing, driving and rest times, formal obligations, weekend driving bans, rules on workplace safety, etc. This argues in favour of a separate and stricter treatment in a DPS. On the other hand, however, the income of professional drivers depends on validity of their driving licence, and they usually share responsibility with employers and hauliers.

In most countries, the DPS treats professional drivers just like all other drivers. Some include offences that typically or exclusively apply to professional drivers, such as insufficient cargo securing, offences in relation to the transport of dangerous goods, driving and resting time offences, or a different BAC level. A few countries treat professional drivers differently, e.g. by applying a shorter lifetime of points or a shorter disqualification period for professional drivers; by separating between the professional and the private licence; or by organising different driver improvement courses.

Besides novice drivers and professional drivers, DPS system may include or have special rules for other groups. The evidence shows that non-motorised road users such as pedestrians or bicyclists also commit traffic offences that increase crash risk. Of course, non-resident drivers and drivers who do not hold a licence are also involved in risky offences. In view of this a majority of interviewees recommended inclusion of all road users in a DPS:

pedestrians, cyclists, drivers not yet or not any more holding a licence as well as non-resident drivers. This option, however, would require a much larger administrative organisation and is likely to be politically unfeasible in the short term. Currently, some countries have the legal opportunity to award points for offences committed by other road user groups, but generally only if the person holds a driver licence. In case of offences committed by non-residents, some countries apply a virtual driver licence and/or have an exchange of information (see Section 11.5.).

11.3.3 The process of designing DPS

Designing and implementing a DPS requires a process of deliberation and decision making. Going beyond the previous Chapters, it may be helpful to consider how this process may be best organized. In the past, points systems have been mainly designed by legal experts, lawyers, and state civil servants with a strong background in traffic law and enforcement. However, if only legal criteria are considered in designing a point system, the resulting system may miss the design elements or principles that determine the effectiveness of a system. Therefore, it is strongly recommended to include other than legal expertise in the design of a DPS. First, the police who actually enforce laws and partly produce the required paperwork should be consulted about the possible strengths and weaknesses of new DPS law proposals. Second, it could be very useful to look at DPS from a systems approach point of view. Various disciplines such as applied mathematics, economics, and operations research could provide a fresh outlook on DPS proposals that may uncover limitations and lead to a simpler system providing fast and predictable feedback to offenders.

11.3.4 Recommendable practices designing DPS

When designing a DPS a number of general recommendable practices can be formulated:

1. A DPS should include major moving risky traffic violations that are associated with increased crash risk or risk of serious injury.
2. The number of points assigned for an offence should be risk-dependent: the more risk involved, the more points.
3. The feedback of the system should be swift in order to enhance the preventive effect of the DPS.
4. Thresholds for intermediate measures like driver improvement courses should be placed so that responsiveness is high; it should take no more than two severe offences within a specific time frame to send someone to a driver improvement course.
5. Preferably, a DPS combines sanctions with some type of reward, e.g. by remitting points after a period of offence-free behaviour.
6. The design of a DPS should pay explicit attention to the procedures of re-granting licences to repeat offenders and repeat licence losers and follow-up monitoring.

One important aspect of the design of point systems is the potential different treatment of different driver groups. For this particular area we formulated the following recommendable practices:

1. A DPS should have a faster response to violations of young drivers since they have an increased risk, and their violation-risk relationship is more pronounced than that of average driver.
2. A DPS should include all professional drivers.
3. For professional drivers application of different thresholds for DUI is recommended.
4. Since licence suspension can be a particularly far-reaching intervention for professional drivers, alternative effective sanctions for specific groups of professional drivers can be considered.

5. Since the violation-risk relationship also holds for other groups than licence holders, it may be considered to include pedestrians, cyclists, and non-licence holders in DPS.

In general, when designing a DPS, it is recommended to include also other than legal expertise so that complexity and precision do not interfere with administrative and procedural ease.

11.4 Support measures

DPSs have three types of support measures, i.e. the 'executive branches' of DPS: traffic enforcement that results in offenders getting points, intermediate measures that are taken when offenders have either collected or exceeded a number of points, and administration that keeps track of offenders information and enables mass publicity, personal communication and system monitoring. The next three Paragraphs discuss the knowledge about these types of support systems. The last Paragraph presents a list of recommendable practices in these areas.

11.4.1 Enforcement

It is clear that unless enforcement is on a certain level and offences are actually detected, DPS cannot be expected to substantially increase road safety in the long run. Even though it is not possible on the grounds of current knowledge to define in quantitative terms how much enforcement is needed for an efficient DPS, Chapter 5 has shed some light on the issue by the following reasoning:

- Without any enforcement, a DPS is meaningless and will hardly induce any sustainable behavioural changes.
- With a low level of enforcement and drivers' expectancy that the enforcement level is high (e.g. directly after introduction of a DPS), DPS will change driver behaviour on the short term, but as soon as drivers realize that the enforcement level is low, the effect will disappear.
- With a moderate level of enforcement and drivers' expectancy that the chance of getting caught is substantial, a DPS will probably have an effect on driver behaviour that is stronger than the effect of enforcement alone, and that may continue over a longer time.
- When the enforcement level is high and drivers expect that the enforcement level is high, a DPS will likely not have a preventative behaviour effect on top of the effect of enforcement alone when sanctions are substantial, but even then DPS may increase the speed or the number of license suspensions compared to normal sanctions. Thus with high enforcement DPS may have little influence on behaviour over and above the influence of enforcement but still have an added value in removing a larger number of supposedly risky drivers from traffic.

Chapter 5 has provided us with some ideas of what can be considered low, moderate and high levels of enforcement. Regarding drink driving, for example, testing at least 1/3 of drivers annually means high level, and testing less than 1/50 means low level. Regarding speed cameras, one camera per less than 10,000 inhabitants means high level of automatic speed enforcement, less than one camera per more than 100,000 inhabitants means low level.

Regarding enforcement methods, automatic speed enforcement and random breath testing should have a major role to other methods targeting similar offences because their capacity in catching violators is greater. Enforcement of seat belt regulations is currently largely based on manual observation but camera applications that can increase enforcement capacity are

also available. The potential capacity of automatic enforcement is greater when sanctions for minor offences can be attributed to vehicle owner (owner liability) without the need to identify the driver.

Results of enforcement in terms of the effects on road user behaviour, issued sanctions, contribution to the functioning of the DPS and the effects on road safety should be published regularly in order to remind citizens of the importance of complying with rules and consequences of non-compliance. From perception and information processing theories we may learn that people are especially aware of changes in their environment and pay specific attention to events that are at odds with what is expected on the basis of previous experience (Freyd, 1987; Gibson, 1986). This would mean that a DPS performs better if the levels of enforcement and publicity vary so that people pay more attention to these measures and regularly reconsider the implications for their own behaviour.

11.4.2 *Intermediate and rehabilitation measures*

As already indicated, one of the three mechanisms of a DPS is *correction*. Most of the times, correction is achieved via warning or information letters, via educational courses and occasionally via therapeutic measures. The intention of these measures is to improve the attitudes and behaviour of drivers with points towards safe driving and to provide him or her with personal strategies to avoid future misconduct.

In this Deliverable, warning letters, educational measures (driver improvement courses), and therapeutic measures before the maximum number of points is reached are called *intermediate measures*. Educational measures (rehabilitation courses) and therapeutic sessions that a disqualified driver has to attend in order to regain the licence are called *rehabilitation measures*. The tests that a disqualified driver has to pass or undergo (driving tests and/or psychological tests) in order to regain her or his licence are also considered as rehabilitation measures in this context.

In some of the DPS countries, drivers with points below the maximum number of points can attend driver improvement courses on a voluntary basis. In those cases, successful completion of the course - sometimes passing a test is required for successful completion - normally results in a reduction of some of the incurred points. In other countries, driver improvement courses are mandatory. Not attending the course implies licence disqualification. Some countries do not have driver improvement courses at all. Rehabilitation measures are always obligatory.

As Chapter 4 has shown, the evidence about intermediate and rehabilitation measures is mixed. With respect to warning letters meta-analyses show that, overall, they are effective in reducing crash rate. However, meta-analyses on the effect of driver improvement and rehabilitation courses are less conclusive; some do and others do not find an effect on crash rate. It must be remembered, however, that a meta-analysis reanalyses the results of various studies on the same subject and combines that into one result. Since driver improvement and rehabilitation courses can differ considerably with regard to, for example, didactical method, criteria for inclusion or exclusion of students and the quality of trainers, it could be that at an overall level there is no significant effect. But it does not exclude that some driver improvement courses with for instance a particular didactical method do have a positive effect. In particular driver improvement courses specifically focused on drink driving are often found to have a significant effect on recidivism. Mandatory courses seem to be more effective than voluntary intermediate measures. In general, offenders should pay for themselves the costs of the driver improvement courses, with perhaps some financial compensation for drivers in the lowest income categories.

Furthermore, it must be recommended that driver improvement and rehabilitation courses are tailor-made for particular groups of offenders. This is to say that if most or all of one's points are the result of drink driving one should attend a course on separating drinking from driving and when most or all of one's points are the result of speeding one should attend a course especially developed to prevent drivers from speeding, et cetera.

No studies could be found about the effectiveness of therapeutic sessions or tests (driving tests and psychological tests) that drivers have to pass or undergo before the point maximum is reached or to regain the driving licence. However, looking at the procedures involved in re-granting a licence, 'simple' skill testing, e.g. repeating the theoretical and practical exams, as a precondition for re-granting seems inadequate when the offending behaviour is determined by some other factor than skill or knowledge. Although the definitive solution cannot be given, a broader medical-psychological examination or a longer term behavioural or psychological assistance or monitoring could be considered as part of a re-granting procedure for specific types of repeat offenders.

Since the effectiveness of driver improvement and rehabilitation courses measures is not conclusive, alternative measures can be considered, for example, in-vehicle technology that prevents drinking and driving (alcohol lock) or speed limit violations (ISA), or in-vehicle technology that monitors various driving behaviours and provides targeted feedback (black boxes). It could be considered, for example, to offer the repeat offender, based on the type of offences, an alcohol lock, an ISA (Intelligent Speed Adaptation) or a black box instead of licence withdrawal.

11.4.3 Administration and monitoring

The administration of the DPS keeps track of offender records and measures targeted at offenders. On the one hand, administration is practically needed to make the enforcement machinery work; on the other hand, administration also collects data that could be used to review or evaluate how the system works. In this Deliverable the term administration is used as a generic term, encompassing all authorities that administer and manage the regulations defined by the DPS in a country. It ensures implementation and operation of decisions according to the DPS and can be considered as the universal process of organizing people and actions towards the objective of the DPS.

Administration is a cost-intensive part of a DPS as staff is needed to transfer the, in most cases, virtual points into legal actions. Three core activities needed to be carried out concerning the administration of a DPS are:

- Keeping the register, including the collection and calculation of points.
- Enforcing measures according to DPS, including the information of offenders, the sending of warning letters and the withdrawal of driving licences.
- Monitoring and statistics.

Administration performs several functions. First, it keeps records of all point collectors and provides administrators with an insight into the internal functioning of the system. Second, it informs offenders about their point status and about the future consequences when they keep committing offences. In addition, the administrative information can be used to generate publicity about the functioning of the DPS and as such support the enforcement efforts.

11.4.4 *Recommendable practices support measures*

In the previous sections we looked at three support measures – enforcement, intermediate and rehabilitation measures, and administration and monitoring. This section concludes with recommendable practices in each of these three areas.

In the area of enforcement the following recommendable practices can be formulated:

1. A DPS should be supported by fairly high levels of enforcement; the added value of a points system is likely to be suboptimal when enforcement levels are either low or high.
2. Variation in enforcement levels as well as enforcement targets, and enforcement publicity can be expected to perform better than constant levels.
3. Enforcement should, on the one hand, be very visible to the general public and on the other hand selective and unpredictable in order to catch offenders.
4. Enforcement should include automatic camera enforcement to realize a sufficient objective risk of detection
5. Public information campaigns, and preferably also local campaigns with localized information, should be used to maintain and increase drivers' subjective risk of detection.
6. It is advisable to use camera systems that allow driver identification. If this is not possible, it is advisable to legally oblige vehicle owners to name drivers of their vehicle on request.

Although the evidence concerning intermediate and rehabilitation measures is quite mixed, the following practices can be recommended:

1. A DPS should send advanced warning letters to offenders that measures follow if more points are collected.
2. The possible effectiveness of educational measures in a DPS can be optimized by tailoring these measures for specific offender groups that have similar problems and share similar features.
3. In a DPS there should be a re-granting procedure that rather concentrates on broader medical-psychological testing and rehabilitation than on skill-based tests (e.g. another driving exam).

Concerning the administration and monitoring recommendable practices are:

1. A central register in which all information about each single offender comes together is necessary to identify repeat offenders and to calculate the actual points' status.
2. Administrative procedures should be clear and simple. This can be done by not involving too many institutions and by ensuring that offense information arrives at the institution responsible for collecting points.
3. Offenders should be informed about the number of awarded points soon after the offence to ensure a high disciplinary effect. Offenders should have easy access to their points' status to make the DPS transparent. There should be several possibilities for offenders to gain reliable information (internet, automatic letters).
4. Daily statistics about notifications may serve as a tool for quality assurance of administrative procedures. Regular statistics, at least on an annual base, fulfil the need to monitor the DPS and evaluate road safety actions, e.g. enforcement strategies. Administrative statistics should be made available for scientific monitoring and research of effectiveness of point system and specific types of measures within the system.
5. Preferably political decisions about changes in DPS are informed by an analysis of monitoring statistics that sums up the possible positive and negative implications of system changes.

11.5 Developments towards a common DPS in the EU

This Section looks at the exchange of information about offences between countries, so that offences committed abroad will weigh on the DPS in the home country, and a possible way towards EU-wide implementation of a common DPS.

11.5.1 Towards exchange EU-wide information exchange

Offences committed by foreign drivers are a major concern, especially in transit countries such as France, Germany and Luxembourg. Non-resident drivers who commit offences may feel that this does not affect their DPS status at home. Several countries already have multi- or bi-lateral agreements to exchange information on offences; in a few countries non-resident drivers can get demerit points, e.g. on a virtual driver licence. However, in the latter case there are several practical difficulties, for example, in sending warning letters to foreign drivers or having them participating in a driver improvement course. In a few cases where there is an agreement between countries, however, an offence in a foreign country can have consequences in the country of residence. For example, when Malta withdraws the licence of a British driver, it will transfer it to British authorities and this might have consequences in the United Kingdom: in case of accumulated points insurance premiums can be increased as well as car rental may be impossible.

The exchange of information about road traffic offences (or points) between all EU Member States is an essential condition when heading towards an EU-wide DPS. In that respect, there are several issues to be considered: method of information exchange, list of defined offences, data protection and responsible authority. Chapter 10 provides us with some guidance on each of these issues.

The easiest and least invasive way of exchanging “points” on traffic offences committed in other Member States is the exchange of information about the committed traffic offence, so that the home country can start with the prosecution of the offenders according to their national law. If there is a list of certain offences on which information is exchanged (speeding, drink-driving, etc.), the description has to be sufficiently detailed. Article 2 of the European Cross-Border Directive already contains descriptions that can be used for this purpose. Furthermore, a cross-national data exchange system requires data protection rules. The European Commission already planned a comprehensive reform of the existing data protection rules, which shall improve and extend the rights of concerned individuals. Finally, in case of cross-national exchange of information, it is important to have one competent authority in every Member State that gathers the information, processes it and is responsible for the protection of information.

11.5.2 Towards an EU-wide DPS

Several Member States of the European Union – such as the United Kingdom, Ireland and Northern Ireland, as well as Austria and Germany – already have multi- or bilateral agreements for an exchange of information on road traffic offences. To explore further possibilities for an EU-wide DPS a workshop was held in Brussels in December 2011 with experts from different national and European road safety-related organizations. The experts formulated a gradual five step approach to EU wide DPS. These five steps can serve as a road map of a gradual approach to a full European DPS.

- As a first step only information on (certain) offences between Member States is exchanged. Either all offences or just the most important ones will be forwarded by the country of offence to the country of residence. For this purpose a driving licence network has to be used.

- As a second step the Commission would recommend that all countries adopt a DPS, referring to the outcomes of BestPoint for guidelines for the implementation of a maximally effective DPS. Arguments for the need of exchange of information can be found in the Cross-Border Directive, e.g. the effectiveness of the investigation of road safety related traffic offences. Beyond that, especially the deterrence effect, the fairness aspect and the aspect of the equity of the system (all EU citizens shall be treated equally) have to be mentioned.
- Thirdly, authorities create a virtual national driving licence for every non-resident violator stopped for the first time. So the foreign driver can be treated equally to a resident driver. Some countries have already implemented such a system like the UK, Italy, the Czech Republic and Luxembourg. Their experiences can be used to create such a system.
- Fourth, every country has to have a DPS which includes a number of offences. But it remains to the Member States to decide how many points for the different offences are registered. Because of the different national provisions a conversion table for every country is needed to allow for some kind of points exchange.
- As the fifth and last step, there is one single and binding DPS at EU level for all Member States as a long-term scenario. At this step also intermediate measures have to be implemented by all countries, e.g. driver improvement courses.

11.5.3 Recommendable practices

With regard to the cross-national exchange of information and the way towards an EU-wide DPS, the following recommendable practices were formulated:

1. Because of different legal situations in the Member States – different kinds of offences, different types of DPS and even countries without DPS, it is best to have a gradual approach towards an EU DPS.
2. The exchange of information on offences (and points) can be best implemented via the Third Driving Licence Directive by amending Article 15 or by implementing a new Article.
3. The planned network RESPER can be used as the network for the exchange of committed offences/points. Such a system would preferably have to work online that the information is available immediately, also for the police out in the street.
4. The offences mentioned in the Cross Border Directive are of great importance for road safety and thus should be included and further on be harmonized in a system of exchange of information.
5. An important factor in relation to data exchange is data protection that has to be guaranteed at EU level.

11.6 Final conclusion

In addition to regular sanctions, a DPS assigns penalty or demerit points to drivers or owners of vehicles after a driver or vehicle has been identified in a traffic offence. There is evidence that a DPS achieves a general short term road safety effects and that a DPS influences specific groups of drivers who have collected point or are threatened by licence suspension. There is no convincing evidence for long term road safety effects of the current systems. Altogether, it has become clear that just implementing a DPS without maintaining it, in particular in terms of enforcement and communication levels, is insufficient to bring about a sustainable effect.

Whereas solid empirical evidence is lacking, theories and theoretical considerations show that the effectiveness of DPS is likely to be improved by optimizing elements of points systems in two areas: first design elements before operation of the system and second elements of support measures during operation of the system. In designing a DPS it should be ensured that

- major risky traffic offences are included;
- the system responds fast to early signs of repeat or serious offending, especially for novice drivers;
- procedures are simple and fast;
- licence re-granting procedures address specific behavioural problems of drivers rather than just skills are an integral part of the initial design; and
- anti-fraud policies are developed.

It is important that in the design phase also other than legal criteria are considered in order to optimize the DPS.

In terms of support measures during the actual operation, the effectiveness of DPS can be enhanced by

- a mix of highly visible and unpredictable enforcement;
- including camera enforcement to detect offences;
- deployment of supporting publicity;
- the use of warning letters;
- the use of educational measures tailored to specific groups of traffic offenders.

In the future, new in-vehicle technology will enable the introduction of new alternative sanctions in DPS that can be expected to be more effective than licence withdrawal.

Last but not least, there is an urgent need for a more solid empirical basis for DPSs and their features. Currently, as indicated several times, the available evidence is limited and, when looking at the effect of individual design or organisational issues even non-existent. Practically, it is very difficult, and for individual features even impossible, to investigate the effects of a DPS through a scientifically sound study design, i.e. a before-after study with a suitable reference/control group. **Therefore, it is suggested to set-up a joint EU DPS database with some basic information about the DPS output (e.g. number of assigned points for different violations, number of licence withdrawals), as well as about some objective performance indicators (e.g. speeding, drink-driving, seat belt use), and complementary enforcement and publicity measures. Such a database would at least provide an indicative effect of different DPSs and their characteristics.**

11.7 References

- Castillo-Manzano, J.I. & Castro-Nunõ, M. (2012). Driving licenses based on points systems: Efficient road safety strategy or latest fashion in global transport policy? A worldwide meta-analysis. *Transport Policy*, 21, 191-201.
- Freyd, J. J. (1987). *Dynamic mental representation*. *Psychological Review*, vol. 94, 427-438.
- Gibson, J. J. (1986). *The ecological approach to visual perception*. Hillsdale, NJ: Lawrence Erlbaum Ass.
- Kahneman, D. & Tversky, A. (1979). *Prospect theory: An analysis of decision under risk*. *Econometrica*, 47, 263-291.