The Participation of Alcohol Addicted Drivers in Alcohol Interlock Programs

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An International Overview

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Content

Appendix (separate document)

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About the author

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Executive Summary

As part of the preparations of the Ministry of Transport, Public Works and Water Management of The Netherlands for a nationwide implementation of alcohol ignition interlocks to reduce drink driving and its harmful consequences, the question was raised whether alcohol-addicted drivers should be eligible for participation in an alcohol interlock program. Hence, a number of research questions were asked and expected to be answered in the present report.

The research aimed primarily at the experience with alcohol addicted drivers of international jurisdictions having implemented or being in the process of implementing alcohol interlock programs. Present research started March 1st 2010 and was finalized August 31, 2010.

Research comprised an analysis of the literature on the development of interlock programs, the conditions governing the programs, their effectiveness, specifically the participation of alcohol dependent drivers in such programs and the likelihood of enhanced risk of their related impairment. The main part of the research, however, was aimed at gathering, analyzing and assessing the experience of jurisdictions with alcohol addicted drivers and hence provide

(1) well-founded conclusions regarding the total effect on road safety of introducing AIP also for alcoholics compared with not introducing AIP in The Netherlands and

(2) advice regarding the necessity for and level of an upper BAC limit for participation in the AIP.

(1) Concerning the total effect of AIP on road safety in The Netherlands this can only be estimated. According to international evaluation studies reduced recidivism by 75% was observed among drivers with an interlock compared to drivers whose license had been suspended. The measured reduced recidivism rates compared to other measures apply to all drivers on interlock programs, i.e. including alcohol-dependent drivers. According to a recent SWOV overview the AIP program would then have the potential to save three to five road deaths annually. The number of lives saved may increase up to eight to ten per year if drivers are not allowed to leave the program until they have evidenced compliance by separating drinking and driving. The annual benefits of the program could finally amount to € 110 million (€ 11 million per life saved), while the costs are less than € 10 million. Moreover, the costs are paid by the participants themselves.
When judicial and administrative legal measures are tuned to the program, in the somewhat more distant future, an annual saving of 30 to 35 road deaths seems possible.

Briefly, the total effect on road safety under the condition of an AIP including alcohol addicted drivers is substantial and exceeds that of other measures.

(2) The experience of 21 jurisdictions (in the USA, Canada, Australia and Europe) in the present overview shows that 20 of them do not apply an upper BAC limit to exclude potential participants from the program. Almost all jurisdictions allow alcohol addicted drivers to be on such a program, some even encourage their inclusion arguing for instance that their risk to continue driving unlicensed and "out of the system" would be substantially reduced. In one third of the jurisdictions addicted drivers are referred to additional measures parallel to the

interlock programs to reduce their risk of relapse after the device is de-installed. However, the great majority of jurisdictions do not report specific problems with addicted drivers. If any, the reported problems are the same as for all DUI drivers**.**

Briefly, there is no need to introduce an upper BAC limit for the alcohol interlock program.

The literature clearly shows that interlocks are highly effective in reducing drink driving as long as the interlock device is installed in the vehicle. There is also evidence that addicted drivers may have an enhanced risk of specific impairment due to long term heavy drinking; it could not be evidenced, however, that this risk would exceed the risk of other high risk offender groups in traffic, such as young and inexperienced drivers, elderly drivers with age-related impairments, and drivers with a variety of medical conditions as long as these impairments are not detected. On the other hand, excluding alcohol-addicted drivers from an interlock program would lead to a variety of problems, such as continuing to drive under the influence, driving unlicensed, having little or no influence on their rehabilitation and thus enhance risk instead of reducing it.

The impairment potential of sober addictive drivers is not questioned by the majority of the jurisdictions. Most jurisdictions ever having discussed the problem prior to the implementation of the AIP encourage to have them in the program in order to reduce risk.

List of Abbreviations

AIP	Alcohol Interlock Program
BAC	Blood Alcohol Concentration
BrAC	Breath Alcohol Concentration
CENELEC	European Committee for Electro technical Standardization
CERMT	Centre d'Etudes et de Recherches en Médicine du Trafic
DISP	DUI Intensive Supervision Program
DOT	Department of Transport
DRI	Driver Risk Inventory
DUI	Driving Under the Influence
DWI	Driving While Intoxicated
HRO	High Risk Offender
ICADTS	International Council on Alcohol, Drugs and Traffic Safety
IDP	Intoxicated Driver Program
IID	Ignition Interlock Device
IIDP	Ignition Interlock Device Program
INRETS	Institut National de Recherche sur les Transports et leur Sécurité
SWOV	Stichting Wetenschappelijk Onderzoek Verkeersveiligheid (Dutch national road safety research institute)
TIRF	Traffic Injury Research Foundation (of Canada)
TRIMBOS	Institute named after Dutch psychiatrist Kees Trimbos

Note: The terms "interlock" and "alcolock" are used synonymously throughout the present report; the term "alcolock" is frequently used in Europe while "interlock" is more often applied in Australia, Canada and the USA.

List of Tables

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1 Overview of Topic

Drinking and driving has an extremely high risk potential in modern transportation. Serious injuries and fatalities as well as damage to property are often the consequence of driving under the influence of alcohol. Combating drinking and driving has been an important issue in research, political, public and societal discussion, in legislative and administrative action. Numerous prevention programs, measures and campaigns have been installed in the past decades. Yet, their impact has not been satisfactory.

In the past 20 years the development of a modern electronic sensor technology for the measurement of breath alcohol content and its combination with the ignition of vehicles to prevent starting the motor at preset values of breath alcohol content has nourished expectations to combat drinking and driving more efficiently as in the past.

The technological development has brought forward highly reliable systems with the capacity to inhibit starting the engine when a defined limit of alcohol content is measured. Alcohol ignition interlock programs have been developed with an increasing effectiveness in reducing recidivism of various risk groups of driving while intoxicated offenders. Programs have become part of the legislations of many jurisdictions in Australia, Canada, the United States and Europe. Licensing measures are frequently combined with interlock program participation hence raising the number of participants.

The chances of offenders to circumvent the interlock device and of tampering and fraud were diminished over time.

One of the main problems up to date is the fact that interlocks prevent drinking and driving only as long as the device is installed in the offenders vehicle. Consequently, accompanying measures to enhance program effectiveness have been developed and their impact on reducing recidivism after de-installation of the device is being evaluated.

The participation of alcohol addicted drivers in interlock programs has been discussed with regard to their potentially enhanced risk. An overview of how jurisdictions cope with alcohol dependent drivers, why they would either exclude them from participation or encourage them to accept a restricted driving license under the condition of participating in an interlock program does not exist currently. The question of alcohol dependence is closely related to the introduction of an upper BAC limit (measured at the time of the DUI offense) for program participation.

The present report is specifically focusing those questions. The report was designed to provide information on the reasoning behind decisions taken in various international jurisdictions; it was not designed to be fully comprehensive and representative.

2 Objectives and Research Questions

The Ministry of Transport (Ministerie van verkeer en waterstaat) has formulated two objectives with respect to the implementation of an Alcohol Interlock Program in the Netherlands:

Objective I:
Insight into the effects on road safety of a sober alcoholic driving with an alcohol interlock (question: how dangerous is a sober alcoholic?). This issue will be discussed with the Dutch Association of Psychiatry and other organizations.

However, as international jurisdictions with interlock programs may have discussed this in the process of implementation of their systems this issue will be touched in the research reported in this report (cf. chapter 4.2 Questionnaire development).

Objective II:
Insight into specific foreign experience with alcohol addicted drivers as participants in interlock programs and the introduction of an upper BAC limit beyond which participation would be denied.

Additionally the Ministry is expecting:

- Well-founded conclusion regarding the total effect on road safety of introducing an Alcohol Interlock Program (AIP) also for alcoholics, compared with not introducing AIP in the Netherlands.
- Advice regarding the necessity for and level of a possible upper BAC limit of an AIP.

The research covered in the present report is expected to focus on Objective I in the sense of providing background information on foreign experience with the issue of alcohol-addicted drivers' risk when participating in interlock applications. Secondly, it is expected to provide scientific information and evidence on the impairment risk of sober alcoholics.

With regard to Objective II an overview of international experience with alcohol-addicted drivers in AIPs and advice on the introduction of an upper BAC limit based on international experience and underlying reasoning is expected. The question of the total effect of an AIP on road safety will be answered through research from other sources and its conclusions are expected to be integrated in the present report.

The original research questions deducted from the above objectives are:

a. What is the international experience with alcoholics participating in AIP's?
    - Who is responsible for imposing the AIP and which criteria determine participation?
    - Are alcohol addicted drivers eligible for participation?
    - If yes:
        - what are the reasons?
        - has there been any discussion about the participation of alcohol addicted persons (with psychiatrists, other medical professionals)
        - do they have to meet special conditions? What are these conditions (special programs?)

- If not:
    - why not?
    - how are they detected?
    - which other measures have been introduced for addicted drivers?
- What are the experiences with alcohol addicted drivers participating in AIP?

b. What are the upper limits for the different foreign AIP's and what arguments are used by choosing one or not?
- Which countries/states have an upper limit regarding the AIP?
- Why do they have it? How did they determine it?
- Which countries/states don't have an upper limit and why not?

c. What are the effects of the foreign AIP's on road safety, especially for alcoholics, compared to other measures like license withdrawal?

Note:
- There is a lot of research done into the effects of AIP's on recidivism compared to other measures. We would like a more in depth description of these results and especially more focussed on alcohol addicted drivers based on recent research.
- Are there any other road safety advantages of AIP's for alcoholics compared to licence withdrawal?

d. What is the total effect on road safety of introducing AIP also for alcoholics compared with not introducing AIP for the Netherlands?

Note:
- To answer this question also results regarding objective 1 are needed. Hence, the results of the work of Trimbos have to be included.
- The SWOV calculation of the effects of introducing an AIP in the Netherlands should also be included.

As a consequence of the above mentioned research questions it was decided to take the following steps.

1) to conduct a literature analysis with respect to (a) the historical development of interlock programs, (b) the outcome and effects of interlock programs, (c) the effect of impairment caused by long-term addictive alcohol consumption (d) and take into account the research that has been conducted previously by TIRF
2) to develop a questionnaire on experience with alcohol addicted drivers in interlock programs
3) to integrate research that has been conducted by SWOV and Trimbos

3. Overview of research literature

The goal of this analysis of the literature is to give a brief overview of the development of interlock applications and their effectiveness during the past 20 years. Special attention will be given to the scientifically based knowledge on impairment of addicted drivers. Impairment of drivers under the influence of alcohol is well-known and has been described and documented in numerous research reports; for the purpose of the current review – according to the research questions mentioned in chapter 2 - focus is placed specifically on the likelihood of impairment of alcohol-addicted drivers when they are sober. Thus, some light may be shed on the question whether addicted drivers pose a specific risk whilst driving with an ignition interlock installed on their vehicle.

3.1 Brief historical overview

In the 1970s it was the main concern of developers of interlock devices to inhibit the ignition of a vehicle at a measured breath alcohol concentration of 1 ‰. The tested devices did not meet the expectations. Only in the 1980s there was progress with respect to improved, more stable and exact measurement of breath alcohol which consequently led to the conclusion that alcohol ignition interlocks could reliably inhibit the start of a vehicle at defined levels of breath alcohol.

In 1986 the State of California issued a law allowing a pilot field study with ignition interlocks. Some of the major problems were circumvention of the device, tampering and other fraudulent techniques aimed at continuing the consumption of alcohol before driving a vehicle (cf. Beirness & Marques 2004).

To reduce the risk of fraud, between 1990 and 1992 it became clear that after a first breath test additional ones should follow while the driver was driving the vehicle (rolling retest).

In 1992 the National Highway Traffic Safety Administration in the USA introduced guidelines for interlock devices, which have been revised several times since then because insufficient technical performance has the potential to impair the image of alcohol interlocks and drink-driving-offender programs. In the European Union the European Committee for Electro technical Standardization (CENELEC) has published guidelines (EN 50436-1 and 2) for test methods and performance requirements for ignition interlocks (Lagois 2008).

The criminal law in Canada has been altered in 1999 enabling the judicial to reduce the driving ban after DUI if the offender participates in an alcohol ignition interlock program.

In the same year Sweden started a voluntary pilot interlock program (Bjerre 2003). Due to little interest only 12% of the potential risk group participated. The results of the pilot program, however, encouraged to extend the program because no participant in the interlock program had a relapse during the program period of 2 years.

In 2000 the United States Congress began to offer a financial incentive for federal states which introduced interlock programs.

In 2001 the International Council on Alcohol Drugs and Traffic Safety (ICADTS) established an interlock working group which published a report the same year (Marques, Bjerre, Dussault et al. 2001) – this working group has been very active over the past 10 years and meanwhile published additional reports. Since 2000 ten annual international Interlock

Symposia have bee conducted in Australia, Canada, Europe and the USA (http://www.interlocksymposium.com/) presenting research and experience with interlock applications.

The European Commission launched a field trial with various groups of drivers in 2003 with the objective of practically testing the application of interlocks (feasibility study). Five groups of 30 drivers each – Spanish and Norwegian drivers from the public transportation systems, Belgian DUI recidivists and abstinent alcohol dependent patients – participated in an interlock trial for one year. A comprehensive report was published in 2006 (Silverans et al. 2006); some of the findings are presented in chapter 3.2.

The German Federal Highway Research Institute started a field trial in 2004 testing the general preventive use in transport companies for heavy goods truck drivers (BASt 2004; Reporter 2004).

Also in 2004 France started a pilot project with a relatively new approach. In the French *département* Haute Savoie first offenders with a BAC of 0.8 ‰ - 1.6 ‰, were entitled to choose within 48 hours after the offense whether they wished to participate in an interlock program for a period 6 months. The alternative (according to French law) would have been license suspension, penalty (possibly prison) and a deduction of 6 points from an overall of 12 points on their license according to the French penalty point system. If the offender chose program participation he would have to cover the costs (about € 1200.- in 2004), give his consent for a medical assessment, have the interlock device installed within 3 days, attend a two days seminar on the program conducted by a driving trainer and a psychologist; as a consequence, the driver would be allowed to keep driving for the six month program period. Data from the interlock device were recorded and checked on a monthly basis; the driver was instructed to repeat the breath test every 40 to 60 minutes. The six month program ended with a review of the data by the prosecutor who decided whether the charge could be dropped (Mercier-Guyon et al. 2005). Evaluation results are expected by the end of 2010.

The British Department of Transport conducted an 18 month study with interlocks in the regions of Bristol and Birmingham (Clayton & Beirness, 2004). In their conclusion, the authors of this study state: “In developing an interlock program, particular attention needs to be paid to maximizing the participation rate. Within the context of the range of penalties for drink driving, interlocks need to be perceived as the most attractive option by offenders. There is an increasing tendency to move towards using the interlock as an alternative to license disqualification and moving from a fixed installation period to one dependent upon the behavior of the participant”. The traffic ministry in the UK announced that legal measures would be taken if the study was conducted successfully.

Finland conducted a trial period with interlocks from 2005 – 2008; the permanent program started in 2008. There are no evaluation results yet. If a driver with a valid driving license is caught driving under the influence, instead of a driving ban he can ask for a conditional right to drive (i.e. participating in the AIP). However, Finland is planning to change the driving license legislation so that alcohol dependence is not an impediment for getting a driving license if the person drives a vehicle with an alcohol interlock. The driving license would have a special code on it for this provision. In addition, the plan is to allow physicians to recommend an alcohol interlock to a driver (e.g. by informing the police) instead of suggesting withdrawal of the license (see chapter 5).

3.2 Previous research prior to the development of the Dutch AIP

3.2.1 Research project on features of international interlock programs

In 2009 the Dutch Ministry of Transport initiated an overview on features and conditions of international interlock programs (Vanlaar, Holmes, Robertson 2009). The overview is containing information on 28 jurisdictions relating to

Limit value of the interlock device
Legal limit of the jurisdiction
Accompanying educational program and its content
Participation of alcohol dependent drivers and special conditions
Type and implementation date of the program
Recidivism
Compliance
Financial support for indigent offenders
Strategies for minimizing cost
Planning of future development

Detailed information on the literature discussing recidivism is presented in a special section of part I of the final report. In summarizing and concluding the statement is justified that alcohol ignition interlock programs reduce recidivism substantially, even for high risk ("hardcore") offenders (drivers with multiple violations).

3.2.2 The web-based interlock program update project

The Traffic Injury Research Foundation of Canada (TIRF) has started a web-based project with the objective to collect and disseminate information on interlock programs (International Inventory of Interlock Programs). The project is located at http://iiip.tirf.ca/project/index.php. The information given on project details is quoted from the corresponding website:

"This international project was designed to provide current information about alcohol interlocks to researchers and practitioners working in this field, and to those individuals and agencies considering, developing, or implementing an interlock program. Its primary goals are to: provide guidance to jurisdictions aiming to develop and implement programs, identify research needs and opportunities, share information, and facilitate ongoing initiatives by providing current, easily accessible sources of information, data, and contacts.
As part of this project, current research and practical information has been compiled about interlock technology, leading research, legislation supporting the implementation of interlock programs, and current activities in the field of interlocks. Proceedings from an international symposia series on interlocks are also available as well as links to research agencies and interlock manufacturers.
A program inventory contains detailed information about interlock programs currently in operation in Australia, Canada, Europe and the United States. The information gathered about each program focuses on key program features, operational details, participating agencies, legislation, and program contacts. This inventory can help guide the development and improve the administration of interlock programs in all jurisdictions. It can also be used to gauge successes and demonstrate the benefits of expanding the use of interlocks to reduce impaired driving."

TIRF have consented to use the information on their website for the purpose of the present research. A great deal of the information on contacts was provided this way. Furthermore, the inventories on the website have been slightly changed and forwarded to those jurisdictions willing to respond to the questionnaire of the present research. The jurisdictions were asked to submit any update information. The completed TIRF inventories for 21 jurisdictions are accessible in the appendix (A4, p. 144 sqq). As the information given via the questionnaire of the present research was more specific with regard to alcohol addicted drivers than that given in the updated TIRF inventory, the latter was not discussed any further in the present report.

3.3 The development of the effectiveness of interlock programs

From the beginnings in the seventies of the past century there has been a continuous improvement of the breath alcohol detection technology which certainly contributed to the enhancement of the effectiveness and, hence, worldwide increasing acceptance and rapid spread of interlock programs.
Effectiveness is most frequently expressed as "recidivism rate" or "relapse rate" of program participants. Recidivism rates of drivers with an interlock device installed on their vehicle are usually compared to the correspondent rates of non-participating controls (e.g. drivers with one or more previous convictions before license reinstatement). If the comparison is based on matched samples a large number of influencing factors like age, previous offenses, social background etc. are taken into account making the results of evaluations more reliable.

The development of the effectiveness of interlock programs over a period of 15 years (1990 to 2005) is demonstrated in Table 3.2. The recidivism rates of interlock program participants is compared to different controls. The percentages given in the table show the reduction of recidivism representing the benefit as compared to no interlock use.

Table 3.2 Effectiveness of International Alcohol Interlock Programs

Author(s)*	**Jurisdiction**	**Offender type**	**Control group**	**Recidivism AIP compared to controls**
EMT Group (1990)	California	first	withdrawal	-20%
EMT Group (1990)	California	recidivist	withdrawal	-47%
Morse & Elliott (1992)	Hamilton County, Ohio	first	withdrawal (matched group)	-65%
Elliott & Morse (1993)	Cincinnati, Ohio	first, BAC ≥ 2,0‰	withdrawal	-65%
Jones (1993)	Oregon	recidivist	Limited license	-38%
Popkin et al. (1993)	North Carolina	recidivist	Limited license	-62%
Popkin et al. (1993)	North Carolina	recidivist	withdrawal	-72%
Weinrath (1997)	Alberta	recidivist	withdrawal	-60%
Tippetts & Voas (1997)	West Virginia	first	No license or refusal	-77%

Beck et al. (1999)	Maryland	recidivist	No license (random sample)	-64%
Voas et al. (1999)	Alberta	first + recidivist	withdrawal	-89%
Vezina (2002)	Quebec	first + recidivist	withdrawal	-68%
Frank et al. (2002)	Illinois	recidivist	Limited license	-81%
Bjerre (2005)	Sweden	first + recidivist	Invalid license (matched group)	-95%
* Sources: Bax et al. (2001); Beirness (2004), Robertson et al. (2006).				

Whereas lower reduction percentages are observable in the early nineties, reductions of recidivism from 60% (Alberta, Canada in 1997) up o 95% for the Swedish program (Bjerre 2003, 2005) have been measured. Factors influencing recidivism are manifold. As a consequence, there are and will be substantial differences in the measured rates depending on the type of the legislation/jurisdiction, type of program (all DUI offenders or subgroups), duration of program, use of recent or outdated technology, accompanying medical and or psychological guidance and/or rehabilitation/therapy, types of sanctions for non-compliance etc.

One of the problems in focus in recent years has been the low safety benefit after the interlock device was removed from the driver's vehicle. However, the net benefit of interlock programs always exceeds the safety margin without interlocks because drivers do not drive intoxicated as long as the device is installed in their vehicle. According to Bjerre and Thorsson (2007) full participation in an AIP has "favorable effects compared to conventional license revocation and would appear to be a useful tool for attaining lasting changes in the alcohol and driving habits of DWI offenders". Additionally, the implementation of educational and rehabilitative measures combined with an interlock device may help even increase the overall net benefit.

3.4 Cost benefit analysis for an alcohol interlock program in The Netherlands

A recent analysis conducted in The Netherlands (SWOV 2009) is estimating that a quarter of all fatal road crashes in The Netherlands is caused by drivers under the influence of alcohol. Three-quarters of these crashes are caused by offenders with a blood alcohol content (BAC) exceeding 1.3 ‰. Despite increased police enforcement to reduce DUI there is no substantial change of the situation since 2000. The annual number of road fatalities caused by serious offenders has in recent years been around 150.

The SWOV report states: "To achieve a more effective approach towards heavy drinkers in traffic the Dutch government has decided to introduce an interlock program in 2010. With this approach the Netherlands follow the United States, Canada, Australia, Sweden, Finland and France. Serious offenders will be forced to have an interlock installed in their car. If they fail to do so, their driving license will be revoked……..Compulsory participation in the program will be for a minimum of two years."

According to international evaluation studies reduced recidivism of 75% was observed among drivers with an interlock compared to drivers whose license had been suspended.

If all serious offenders were eligible for the program, there would approximately be 13,500 per year. If they were eligible to participated in the program immediately, an estimated two thirds would indeed do so. However, the most serious offenders (novice drivers with a BAC of 1.8 ‰ or higher and drivers with a BAC of 2.1 ‰) are not eligible for the program. The same is applicable to suspects who refuse tom provide a breath sample.
Moreover, the largest part of the remaining group is facing license suspension or withdrawal. An annual number of approximately 2,200 offenders are expected to be on the program. If another 10% of the participants drop out during the program, there will a permanent number of approximately 4,000 drivers who take part in the program. The program would then have the potential to save three to five road deaths on an annual basis. This number of lives saved may increase up to eight to ten per year if drivers are not allowed to leave the program until they have evidenced compliance by separating drinking and driving. In that case there might eventually be a permanent number of 6,000 participants in the program. The annual benefits of the program could then amount to € 110 million (€ 11 million per life saved), while the costs are less than € 10 million. Moreover, the costs are paid by the participants themselves. When judicial and administrative legal measures are tuned to the program, in the somewhat more distant future an annual saving of 30 to 35 road deaths seems possible (SWOV 2009).

3.5 Knowledge on impairment of alcohol-addicted drivers

The Objective I: (chapter 2 of the present report) aims at gaining insight into the effects on road safety of a sober alcoholic driving with an alcohol interlock. Consequently, the question is, how dangerous is a sober alcoholic? Although this issue will be discussed with the Dutch Association of Psychiatry and other organizations, a brief look at the risk of sober alcohol-dependents associated with driving a vehicle seems necessary with respect to the content of the present research report.

To facilitate comparison of non-addicted and addicted samples impairment studies of non-dependent social drinkers are reported:

According to Parker & Noble (1977) as well as Parker et al. (1983) who investigated whether or not there is measurable alcohol-related cognitive impairment *among nonalcoholic social drinkers*, a dose-response relationship between alcohol consumption and diminished scores on certain neuropsychological tests is evidenced. Reductions in test performance were found for people whose self-reported alcohol consumption was in the range of what was considered social drinking. Social drinkers display performance deficits correlating with alcohol consumption although being far from clinically impaired. However, *studies did not consistently generate statistically significant findings*. In a study by Bergman et al. (1983) no correlation between self-reported alcohol consumption and neuropsychological test scores was found. Another study (Emmerson et al. 1988) showed no indication of a simple dose-response relationship.

An overview of related studies by Parsons (1986) concluded that data on the relationship of cognitive impairment to the amount of alcohol consumed by social drinkers are *inconclusive*.

Summarizing this, and relating it to the situation in traffic it was shown that there *may be alcohol induced impairment even in social drinkers.*

Well founded studies by Parsons & Leber (1981); Eckardt & Martin (1986); Tabakoff & Petersen (1988) showed that most alcohol-dependents entering treatment do not show a

reduction of overall intelligence scores, however, about 45 to 70 percent of these patients have specific deficits in problem solving, abstract thinking, concept shifting, psychomotor performance, and difficult memory tasks. Such deficits usually are not apparent without neuropsychological testing.

Structural changes in the brains of alcoholics have been reported by Ron (1979) and Wilkinson (1987), as well as reduced cerebral blood flow (Ishikawa et al. 1986) and altered electrical activity (Porjesz & Begleiter 1981), but there was not yet any clear evidence showing that these changes were the cause of any observed cognitive deficits.

Evidence indicates that some cognitive impairment in alcoholics is reversible. Goldman (1986, 1987) reports spontaneous recovery of cognitive function (recovery after time without intervention) among abstinent alcoholics, whether this result is due to the absence of alcohol or to other changes, e.g. better nutrition and opportunities for social interaction in a treatment setting, was not concluded. Some evidence shows that cognitive training and practice experience (remedial mental exercises) can facilitate recovery from impairment.

In summarizing, there is impairment in alcohol-dependents – although some 30 – 55% do not display impairment and most do not show a reduction in overall intelligence scores.

According to Bjerre (2003) "most Swedish DWI offenders are alcoholics or problem drinkers (p. 17)", and in the Swedish sample (n=311) "among the interlock users 50% had been diagnosed as alcohol dependent and 10% as alcohol abusers". Despite this high proportion of alcohol-addicted drivers, the Swedish interlock program generated a reduction of recidivism of first time offenders as well as multiple offenders by 95% (Bjerre 2005, cited from Silverans 2006).

Another more recent study dealing with alcohol-addicted drivers in an interlock field trial in three countries of the European Union has been conducted by Silverans et al. (2006).

In this study it was intended to include a group of alcohol dependent drivers; the problems becoming evident during the study inhibited that it could be conducted according to the design with the proposed number of voluntary alcohol- addicted participants.

Therefore research had to be fitted to the situation by including voluntary participants with a drinking problem. The fact that lack of willingness to participate in the trial had no consequences for the patient does not necessarily render the alcohol dependent trial less valuable. “For motivated abstinent alcoholics, the alcolock might be a possible support for the execution of their intention not to drink and drive any more, and it might perhaps even have therapeutic effects with respect to their drinking behaviour. In any case, the installation of an alcolock in the vehicle of an alcohol dependent person will certainly keep a person at risk out of traffic when he is drunk, and thus will also contribute to traffic safety.” (Silverans et al. 2006)

There is absolutely no doubt in international research literature that a vehicle cannot be started by a driver with a blood alcohol content exceeding the preset system level. Hence, driving under the influence of alcohol is not the problem for addicted drivers with an interlock device installed on their vehicle. The remaining problem may be that of risk resulting from impairment caused by long-term alcohol consumption. On one hand, impairment caused by medical conditions (e.g. such as the probability of a seizure in cases of epilepsy, cardiovascular diseases etc.), age-related health issues, non-compliance of patients with

diabetes, and risk due to inexperience and behavioral deviations especially in young adolescents are usually generally accepted in “mobile societies”; there is no indication that those impairments differ from the risk associated with potential impairment of a sober alcoholic. On the other hand, excluding alcohol-addicted drivers from an interlock program would lead to a variety of problems, such as continuing to drive under the influence, driving unlicensed, having little or no influence on their rehabilitation and thus enhance risk instead of reducing it.

A final citation from the conclusions of the European study contains an advice regarding the handling of alcohol addicted drivers and is therefore quoted literally:

> “With respect to participation and compliance, the 'ideal' alcolock program for drink driving offenders based on findings in the literature would be:
>
> - Mandatory, successful completion of the program being a condition of full license
> - reinstatement.
> - Tailored to distinctive target groups (varying from first to alcohol-dependent
> - offenders).
> - Flexible in duration.
> - Not preceded by a (lengthy) period of hard suspension.
> - Administered by licensing authorities.
> - Recorded on the driver's license.
> - Regularly monitored, including medical assessments for alcohol-dependent drivers.
> - Combined with some kind of rehabilitation” (Silverans et al. 2006).

The Trimbos overview of specific impairment of alcohol-addicted drivers when driving sober (van Bunningen, Weingart 2010) concludes that no specific research has been conducted on this subject.

3.6 Summary of relevant knowledge

Over the past 20 years the development of interlock devices and programs has generated continuous improvement in technology, program design administration and judicial frame. Reduction of recidivism is substantial and ranges up to > 90 % as long as the device is installed in the offenders’ vehicle as compared to matched samples without an interlock.

Driving under the influence of alcohol is associated with a variety of impairments of cognitive, psychomotor and other functions. The vast majority of such findings does not differentiate between alcohol-addicted and non-addicted drivers (simply because there were no attempts to detect addicted drivers). Evaluations of interlock programs do not differentiate between dependent and non-dependent drivers as well; hence, the measured recidivism rates apply to all drivers on interlock programs, i.e. including alcohol, dependent drivers.

Although there is evidence that sober alcohol-dependents display a number of impairments associated with alcoholism as a consequence of long-term heavy drinking, there is no evidence that this specific group shows a higher risk potential than other risk groups of drivers, such as elderly drivers, adolescents (aged 16-24), and drivers with specific medical conditions.

4 Method

4.1 Description of methods

The research methods have been chosen according to the original research questions asked by the Ministry of Transport and have been extended on the background of additional comments provided by the Ministry and a discussion of the primary goal of the current research.
Hence it was concluded to collect information on experience with interlock applications in North America (USA and Canada), Australia and Europe primarily by a questionnaire. Information gathered would then have to be checked for completeness, whether questions had been fully understood by respondents, whether the information was non-contradictory and reliable. If additional questions would have to be asked on the background of the completed questionnaire, respondents would have to be contacted again in order to receive the relevant information. In some cases it was planned to conduct telephone interviews to facilitate the process of providing information for the respondents. From experience it is known that some respondents prefer a single questionnaire contact while others tend to provide full information during an interview (e.g. Nickel & deGier 2009).

The methods and sources used in the current research are:

- questionnaire on experience with alcohol interlock programs
- telephone interview
- program update questionnaire (with permission of TIRF)
- interlock program site visit
- literature analysis

4.2 Questionnaire development and dissemination

The content of the questionnaire (Appendix A 1) was developed in close cooperation with the Ministry. Wording of questions was checked by an alcohol researcher and native speaker in order to avoid misunderstandings due to language flaws.

The front page of the questionnaire served as an introduction to the research project and the type of questions to be answered; furthermore respondents were asked to return the questionnaire by April 10, 2010; the deadline had later been extended to May 15.

Questions were ordered according to three main topics:

1 Main objectives of the Alcohol Interlock Program (AIP)
2 Experience with alcohol addicted drivers on the Alcohol Interlock Program in the respondent's jurisdiction
3 Estimate of effects of the AIP and alternative measures on road safety

Ad 1 (Objectives of the AIP):

As the objectives of an AIP may differ it was asked whether it was a goal to reduce overall drinking and driving in the general driver population by a specified percentage, or to reduce drinking and driving for high risk drivers. For the high risk driver group it was asked whether the program was addressed at all high risk drivers (including BAC > 1.6‰ at time of apprehension) or only at specific subgroups of drivers or to combine the reduction of drinking

and driving with maintaining mobility of drivers instead of license revocation/withdrawal or suspension (Question 1.1)

Question 1.2 (Which is the judicial/administrative framework of the AIP in your jurisdiction?) was asked because the framework of an AIP may have a substantial impact on the outcome.

All questions provided for extra space for a comment or additional information.

Ad 2 (Specific experience):

Questions in this section focused on "evaluation" and "specific experience".
Questions 2.1 and 2.1.1 asked whether an evaluation of the AIP had been conducted or was planned. If no evaluation had been undertaken or planned, the respondent was asked for information on how the jurisdiction intended to determine the success or failure of the AIP.

Questions 2.2.1 through 2.2.6 represent the main part of the questionnaire as they asked for information on the experience with alcohol addicted drivers:

2.2.1 Eligibility of alcohol addicted drivers

Are alcohol-addicted drivers eligible for participation in the AIP? If no, are there other specific measures directed at alcohol-addicted drivers?

2.2.2 Detection of alcohol addicted drivers

How are alcohol-addicted drivers detected?

By special medical examination
By analysis of driving records
By police/administrative assessment
By classification by BAC at time of apprehension
Or: other

2.2.3 Upper BAC limit

(Do you have an upper BAC limit for participation? And: The upper limit is set at BAC:……..g/L or BAC ……..‰),
As an important part of this question the respondents were asked to provide the reasoning behind their decision to apply or deny an upper limit (Why was the specific upper limit chosen or why does your AIP not apply any upper BAC limit? Please comment)

2.2.4 Consequences of alcohol-addiction

There is some scientific evidence that addictive drinking may cause severe physical and mental (cognitive) deficiencies with the potential to impair driving behavior even when driving at zero or low BAC. Was this knowledge discussed (e.g. with psychiatric experts) before the implementation of the AIP? In case of an affirmative answer the respondent was asked to comment on the results of this discussion.

2.2.5. Requirement of special conditions

Do alcohol-addicted drivers have to submit to special therapeutic programs before they are admitted to the AIP or while the interlock is installed? (Before admission to AIP or during program participation)

Are there other specific conditions for program participation by addicted drivers?)
Respondents were asked to provide additional information on their program. In case their jurisdiction did not impose any specific conditions on addicted drivers, they were asked to comment on the reasons for not requiring addicted drivers to meet special conditions.

2.2.6 Experience with alcohol-addicted drivers on the AIP program

Have there been problems with alcohol-addicted drivers on the AIP? (Respondents were asked to specify problems if there had been any.)
Have there been any interventions to reduce problems with addicted drivers on the AIP?
Again, respondents were asked to specify the type of the intervention, if any.

Ad 3 (Effects on Road Safety):

The estimate of effects of the AIP on road safety in the various jurisdictions served the purpose of obtaining subjective judgment from experienced administrators and experts on the effect of a program.

As an estimation method a standard nine scale was chosen (mainly for the purpose of preventing the use of grades in numbers) for the estimate of the total effect of AIP on road safety and secondly for the measurement of the impact of other measures (than AIP) on reducing drinking and driving a similar scale (reduced to five cells) was applied; the latter was chosen in order to prevent the application of the same assessment procedure as for the first estimate and thus reducing the likelihood of a halo-effect.

Question 3.1 read: Apart from any evaluation – what is your estimate of the total effect of the Alcohol Interlock Program on road safety in your jurisdiction?

Question 3.2 read: Impact of other measures on reducing drinking and driving.

The questionnaire offered the following measures for comparison:

- License suspension/revocation
- Fine
- Prison
- Long term therapy
- Educational program
- Regular medical examination
- other (please specify)

A second questionnaire (appendix) on updated AIP information was mainly taken from the TIRF website (with permission of TIRF) and sent along with the questionnaire designed for the present report. The objective of this second questionnaire was to compare the available information with the one given for the purpose of the present report. Secondly it served as background information for respondents in order to make them aware of the current knowledge of their program. The results of the update information questionnaire are presented in the appendix (A4, p. 144 sqq)

4.3 Selection of potential respondents

Potential respondents were selected from various sources: Traffic Injury Research Foundation (TIRF) report (Reference), TIRF website (Reference), contact details provided by the Dutch Ministry of Transport and contact details provided by a number of researchers. All potential respondents including contact details and contact experience are listed in table "List of contacts" (Appendix A 2.2.1, p. 111-119).

As it was not the goal of the present report to get detailed insight into interlock research, researchers in the field were not addressed. The target group was defined as program administrators/managers. Further specific criteria for the selection of respondents were not applied. In some cases a program administrator asked a researcher involved in program administration to either respond or assist in responding.

Experience and results of contacts with potential respondents are reported in chapters 5.1 and 5.2.

4.4 Determination of telephone interviews

All potential respondents were asked whether they would be willing to be contacted in case of any questions with regard to their responses (May I contact you either by email or telephone?) and to provide their current contact details including: office hours, time zone, most convenient time for telephone contact, telephone (including country and area code), email contact details.

4.5 Period of questionnaire dissemination and responses

The questionnaires were disseminated from March 1 through April 15. This prolonged period of dissemination became necessary because many contacts proved to be either incomplete or outdated, hence resulting in time consuming further searches for contact persons in several jurisdictions.

5 Results of the questionnaire overview

Questionnaires were sent to contacts in the following 51 jurisdictions:

Australia: New South Wales, Queensland, South Australia, Victoria

Canada: Alberta, Ontario, Quebec, Manitoba, New Brunswick, Nova Scotia

Europe: Belgium, Finland, France, Sweden

USA: Arizona, Arkansas, California, Colorado, Connecticut, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin.

5.1 Completed questionnaires

Completed questionnaires were obtained from AIP representatives of the following 21 jurisdictions:

South Australia, Victoria; Wisconsin, New Hampshire, New Jersey, California, Florida, Missouri, New Mexico, Washington, Utah; Manitoba, Nova Scotia, Alberta, Ontario, Oregon, South Carolina; Belgium, Sweden, France, Finland.

Hence, all continents with interlock applications were covered, as well as all European jurisdictions. The response rates differ substantially:

Australia:	50%
Canada:	50%
Europe:	100%
USA:	25%

The low response rate for the United States is mainly due to the circumstance that almost all attempts to get information on more recent contact details of > 70% of the potential respondents failed; only some responded originally but did not complete the questionnaire and did not answer several phone calls and email reminders. In most no-response cases there were at least three more attempts to obtain a reaction; inquiries for more recent contact details sent to neighboring jurisdictions only had a positive result in two cases.

As the research period for the present report was limited and because the report was to be delivered by the end of August 2010, no further attempts were undertaken.

As representativeness for all international interlock programs was not a condition for the present research the sample (21 jurisdictions) may be categorized as random. The quantity and more important, the quality of the provided information and the underlying reasoning is described in chapter 5.2.

5.2 Quantity and quality of information

The majority of respondents fully completed the questionnaire. Whenever this was not the case, a second email containing questions on incomplete parts of the questionnaire was sent to the respondent. The same procedure was chosen if the respondent had misunderstood a question or had given contradictory information (e.g. compared to the information known from the latest update of the interlock website of TIRF.)

The quality of the responses varied with respect to additional information given, with the number and completeness of comments, and the number of references. In some cases the quality could be raised via telephone interview.

In one case, the quality of the information was additionally raised by a site visit (France).

5.3 Responses

This section covers all information from the sources described in section 4.1: questionnaire on experience with alcohol interlock programs, telephone interviews, site visit, literature analysis and (if applicable) questionnaire on program update information.

Each research question is covered individually; all tables are commented and conclusions with regard to the AIP in the Netherlands are presented.

5.3.1 Goals of Interlock Programs

As a jurisdiction may intend or may have intended to reduce drinking and driving in the general driving population or restrict their intention only to all high risk drivers (i.e. those exceeding the BAC limit substantially including BAC > 1.6 ‰ at time of apprehension), or only those high risk drivers who belong to a subgroup (to be defined by the national jurisdiction) or, finally, to combine the reduction of drinking and driving with maintaining mobility of drivers instead of license revocation/withdrawal or suspension, all questions on this differentiation were asked. Table 5.3.1 shows all responses to question 1.1 "Which is the goal of the AIP in your jurisdiction?"

Table 5.3.1 Goals of interlock programs in jurisdictions (table with annotations in the appendix A 2.2)

Jurisdiction	Reduce overall DUI	Reduce HRO[1] driving			AIP instead of license measures
		General	All HROs	Only subgroups of HROs	
South Australia	-	yes	yes	-	-
Wisconsin	-	yes	yes	-	-
Victoria	yes	yes	yes	-	-
New Hampshire	-	-	-	-	yes
New Jersey		yes	yes		
Alberta	yes	yes	-	-	-
California	yes	yes	-	yes	-
Florida	-	yes	yes	-	-
Manitoba	-	-	-	-	yes
Missouri	yes	-	-	-	-
New Mexico	-	-	-	-	yes
Nova Scotia	yes	yes	yes	-	
Ontario	-	yes	-	yes	-
Oregon	yes	-	-	-	-
South Carolina	yes	-	-	-	yes
Sweden	-	yes	-	-	-
France	-	-	-	-	yes
Finland	yes[2]	-	-	-	-
Belgium	-	-	-	yes	-
Washington	-	-	-	-	yes
Utah					
Total	8	10	6	3	6

[1] HRO = high risk offender

[2] Also the last choice, but the main goal is improve traffic safety by reducing drinking and driving

Reducing overall DUI: Eight jurisdictions, California, Missouri, Oregon, South Carolina in the United States, Alberta and Nova Scotia in Canada, Victoria (Australia) and Finland in the European Union.

Reducing DUI in the high risk offender group and subgroups:

Most jurisdictions obviously aim at reducing driving of high risk offenders (HRO); however, HRO are defined differently: in New Jersey for example, HROs were defined as second and subsequent offenders whereas in Ontario a HRO subgroup of offenders was defined as "convicted impaired drivers" and "drivers with multiple convictions of exceeding the administrative limit". Five jurisdictions (New Hampshire, Manitoba, New Mexico; Washington and France as the only European jurisdiction to do so) declare their main goal of introducing AIP being an alternative to hard license measures. The Washington (State) jurisdiction has the AIP as a part of its "Target Zero" plan and aims at eliminating alcohol related fatality collisions "hoping to reduce the number of people who continue to drive while suspended by now offering an option to the hard suspension period usually associated with a driving under the influence offense."

In one jurisdiction (California) judges can order participation in the AIP for drivers they deem "to be at particularly high risk". The definition of "high risk" obviously varies substantially and does not necessarily utilize scientific criteria.

In South Australia driving with high BAC levels results in loss of the driving license and a court ordered hard suspension of the driving license. The full disqualification time ordered by the court is required to pass before the driver is eligible to enter the alcohol interlock program.

Drivers can be excluded from the interlock program if they receive a driving disqualification e.g. a speeding offence, while on the program. At the end of the speeding disqualification, the driver can return to the interlock program to complete the remaining time.

In Belgium it is planned to direct the AIP at those offenders, who had a BAC of at least 0,8 ‰, or had been apprehended being in state of inebriety[3], or had more than one DUI offense.

Instead of License Measures

The item "to combine the reduction of drinking and driving with maintaining mobility of drivers instead of license revocation/withdrawal or suspension" was marked by six jurisdictions: New Hampshire, Manitoba, New Mexico, South Carolina, Washington and France. In a comment, for Washington, it was stated that the incidence of driving while suspended correlates negatively to some degree with the measures taken to control for driving without a license: drivers being aware of a low degree of surveillance/enforcement may tend to use their car more often because they may estimate the probability of being caught as low; as there is some evidence that driving while suspended may be reduced in jurisdictions applying interlock this is likely to turn out as an important side effect enhancing traffic safety.

[3] (inebriety = inebriation = alcoholism = drunkenness, Dorland's medical dictionary)

Conclusion

The goals of interlock programs are similar but not identical. Most importantly, clearly defined goals will ease any attempt of evaluating the program; most jurisdictions in the present report have formulated one or more goals. Whether they differentiate reducing overall drinking and driving and reducing DUI in the high risk offender groups could make an important difference: applying an upper BAC limit and/or excluding alcohol addicted drivers would certainly be questionable if the jurisdiction is aiming at drinking and driving in high risk offender groups.

5.3.2 Judicial/administrative framework

Interlock programs differ substantially with respect to their judicial framework. The framework may either be an exclusively judicial one, an exclusively administrative one or a combination of both, partly depending on constitutional or criminal law.

Table 5.3.2 Judicial/administrative framework

Jurisdiction	Judicial	Administrative
South Australia	-	**Yes**
Wisconsin	**Yes**	-
Victoria	**Yes**	-
New Hampshire	**Yes**	-
New Jersey	**Yes**	-
Alberta	**Yes**	**Yes**
California	**Yes**	**Yes**
Florida	-	**Yes**
Manitoba	**Yes**	**Yes**
Missouri	**Yes**	**Yes**
New Mexico	**Yes**	**Yes**
Nova Scotia	**Yes**	**Yes**
Ontario	-	**Yes**
Oregon	-	**Yes**
South Carolina	-	**Yes**
Sweden	-	**Yes**
France	**Yes**	-
Finland	**Yes**	-
Belgium	**Yes**	-
Washington		**Yes**
Utah	**Yes**	**Yes**
Sum (all)	**14**	**14**
Judicial only	**7**	-
Admin only	-	**7**
Combination of admin and judicial	**7**	

The approach – judicial, administrative or both – depends on several conditions. Most importantly the political goal plays a role, the judicial system and the willingness to implement measures linked to a high degree of effectiveness. Effectiveness is to a high degree dependent on the number of installed interlocks – the selected approach may determine the number of installed interlocks. Whether a judicial approach or an administrative one will in have the highest impact on reducing the number of alcohol related injuries and fatalities depends on the legal construction to address those who need an interlock most and if loopholes are reduced in practice. Both systems may be constructed equally powerful if the law contains unambiguous regulations (Appendix A 3.2, p. 141-143).

Six jurisdictions have chosen the judicial approach only: in Victoria (Australia) Wisconsin, New Hampshire, New Jersey (all USA), Belgium, France and Finland (Europe).

The administrative approach only was selected by South Australia, Ontario (Canada), Florida, Oregon, South Carolina, Washington (all USA) and Sweden.

A combination of both approaches was selected by Alberta, Manitoba, Nova Scotia (all Canada), California, Missouri, New Mexico, and Utah (all USA).

Only one jurisdiction (Utah) with both a judicial and an administrative system has not empowered the administration with enforcement authorities with the consequence of little support for the interlock program. Generally, a clearly defined role of each, jurisdiction and administration respectively is exerting substantial influence on the functioning of a program and hence is necessary if any positive effect should prevail.

In California, there has been an increasing move from a judicial interlock program to an administrative one; currently judges have the discretion to order an interlock, but there are also administrative programs run by the Department of Motor Vehicles.

In Manitoba there is a cross-over between criminal law which authorizes the reduction in a federally imposed driving prohibition and the provincial regulations which govern the provincial interlock program. In New Mexico individuals can have their driver's license revoked either criminally or administratively. Additionally the licensing, oversight and monitoring of the interlock providers is done by the Traffic Safety Bureau of the Department of Transportation. In Nova Scotia the program is administered by the Registry of Motor Vehicles. While the judicial system has some influence in terms of e.g. minimum revocation periods, the Registry determines who can enter into the interlock program and when a person can do so. Oregon has a Diversion program[4] for a person's first offense within 15 years. If a person is granted Diversion, a Judicial court may order the device as a condition of the Diversion agreement. In South Carolina, the interlock program is an administrative sanction placed on convicted drivers by the Department of Motor Vehicles. Regardless of what the driver is convicted of or pleas to once the record goes to the department they determine if the driver is required to have an interlock prior to getting their license reinstated.
In Washington, the Department of Licensing is responsible for imposing the interlock restrictions; however the courts can lengthen the requirement period. Beginning in 2011 interlock devices will also be required for drug related convictions. In addition drivers will no longer be able to wait out the restriction period as Washington will begin monitoring behavior with the interlock device.
In Belgium, the implementation of a new law (Law of 12 July 2009) is planned for October 1, 2010 (due to the recent change of the government there may be a delay).

[4] Diversion Programs: A number of states have programs allowing certain DWI offenders to be diverted from criminal sanctions by entering alcohol education or treatment programs. Diversion programs (DPs) are intended for first offenders and may be referred to by a number of different terms: deferred prosecution, deferred judgment, deferred adjudication, deferred sentencing, pre-trial diversion, probation before judgment, continued without a finding, etc.
With strong supporters and harsh critics, DPs generally allow charge dismissal after successful completion of a treatment or education program and can prevent or delay information about an offense from appearing on the offender's driving record.

Conclusion

First, from the information given on the judicial and administrative frames it may be concluded that both systems are judged efficient by a number of jurisdictions.

Second, and most importantly what can be learned from the experience in various jurisdictions is that there must be close cooperation and communication between the justice courts and the administration (and this ought to be added: with any service provider as well). Lack of communication and cooperation may result in frustration of those involved and in the long run lead to reduced effectiveness of the program.

5.3.3 Evaluation

The responses to the question whether any evaluation had been undertaken or is planned are given in table 5.3.3.

Table 5.3.3 Program evaluation in various jurisdictions

Jurisdiction	Yes	No
South Australia	**X**	-
Wisconsin	**X**	-
Victoria		**X**
New Hampshire		**X**
New Jersey	-	**X**
Alberta	**X**	
California	**X**	
Florida	**X**	
Manitoba	-	**X**
Missouri	**X**	-
New Mexico	**X**	-
Nova Scotia	**X**	-
Ontario	**X**	
Oregon	**X**	
South Carolina		**X**
Sweden	**X**	-
France	**X**	
Finland	**X**	
Belgium	**X**	
Washington	**X**	
Utah		**X**
Total	**15**	**6**

Obviously most of the jurisdictions represented in this overview have conducted evaluations of their interlock programs or are planning to do so. Only six jurisdictions report that they have not conducted an evaluation. Interestingly, Victoria (Australia) is giving a number of reasons why a specific evaluation would not necessarily have to be conducted:

> "(1) the percentage of interlocks per driver and
> (2) the percentage of interlocks per drink drive offender and
> (3) the number of drink drive trips prevented by interlocks on high risk drivers and
> (4) the reduction in drink drive crashes within the target interlock groups" determines the effect of the AIP.

Most jurisdictions responded to this question by giving more or less extensive comments including additional information:

South Australia: "A report was done in 2003 of issues with the voluntary AIP. However this is not relevant to the new program. The numbers of participants in the new AIP compared to those eligible for entering the AIP will be measured early in 2011 to evaluate participation rates in the AIP."
Wisconsin: There is a detailed and comprehensive report on the Wisconsin AIP (http://www.dot.wisconsin.gov/library/publications/topic/safety/iid-report.pdf - accessed May

12, 2010) which, however, does not contain information on recidivism rates but a great deal of information on improvement potential.
New Hampshire: The courts administer the program, so the Division of Motor Vehicles acts only as the point-of-contact with the vendors. Unfortunately, there was no further response to the additional question on which organization may have an overview.
New Jersey: The respondent is not aware of an evaluation but other organizations may be planning one. There was additional information given after repeated contact, however, the IDP website does not contain any information on an alcohol ignition interlock program or any referrals to such a program: www.state.nj.us/humanservices/das/staff/email/index.html (accessed June 12th, 2010). Drivers are sentenced by the court at the time of conviction for DUI with a BAC of 1.5% or above to have an interlock installed during the period of license suspension and for a time period as a condition of restoration. The Intoxicated Driver Program (IDP) is required in addition to the driver being sentenced to have an ignition interlock installed. The IDP does not monitor the drivers on the program. The amount of time that the ignition interlock is required is determined by the sentencing judge in accordance with the time parameters in the law.
California: There was an additional information about the website (http://www.dmv.ca.gov/about/profile/rd/r_d_report/Section%205/217_ignition_interlock_technical_report.pdf and http://www.dmv.ca.gov/about/profile/rd/r_d_report/Section%205/195_Ingnition%20Interlock.pdf – accessed May 20, 2010) showing mixed results mainly depending on low installation rates.
Missouri: An administrative review was conducted in February of 1999 shortly after passage of legislation that required ignition interlock use through a judicial program.
Nova Scotia: The Traffic Injury Research Foundation (TIRF) is currently in the process of evaluating the interlock program, however, any data/information that could be shared at this point are not available. Evaluation data to suggest whether our interlock program has had an impact on impaired driving in Nova Scotia will be available in 2013.
Ontario: There is some information on evaluations in other Canadian jurisdictions, but none on Ontario.
Oregon: An evaluation has not been conducted since 1993. Since then, the program has been implemented throughout the state (it was previously a pilot program only in certain counties.) There has not been any discussion regarding another evaluation.
South Carolina: Once the IID program has been operational for a few years a study will be recommended to determine its effectiveness.
Sweden: A major evaluation study has been conducted (Bjerre 2005).
France: An evaluation is currently conducted by INRETS and CERMT; first results will be available by the end of 2010.
Finland: Two studies were completed during the trial period (1.7. 2005 –30.6.2008). There has not yet been any evaluation of the permanent program, which was started 1.7.2008. (for further information http://www.lvm.fi/fileserver/LVM38_2007.pdf was recommended.)
Belgium: Once the legislation is implemented, the institutions that guide and accompany the sanctioned driver have to send an annual information about their AIPs to the Federal Public Service for Mobility and Transport. An evaluation on that basis will be conducted.
Washington: Although the number of devices installed are continuously monitored, the number of driving under the influence offenses, number of driving while suspended, etc. there has been no formal report completed or published to date. Law enforcement is also tracking compliance of the installation companies.

Summarizing the information on evaluations clearly shows that in most jurisdictions evaluations have either been conducted in the past, are being conducted currently or planned.

One jurisdiction (Victoria) provides a reasoning on why an evaluation would not necessarily have to be conducted.

Conclusion

Recent evaluation literature shows that interlocks serve the purpose of inhibiting drivers from driving under the influence of pre-set amounts of alcohol as long as the device is installed (Marques, 2009). From this point of view, as high effectiveness of AIP for all DUI drivers is evidenced jurisdictions might take the decision to waive evaluation. On the other hand it may be argued that potential improvement of the program(s) is made difficult if no evaluation data are provided and accessible. Additionally it may be argued that any law and regulation, particularly those imposing restrictions of individual liberties should be evaluated not only for detection of improvement potential but for the purpose of demonstrating evidence to the public.

5.3.4 Specific experience with alcohol-addicted drivers

This section of the present report is describing, commenting and summarizing the information on the core questions on international experience with alcohol addicted drivers in interlock applications.

5.3.4.1 How are international jurisdictions dealing with alcohol addicted drivers?

In order to facilitate understanding of how international AIPs deal with alcohol-addicted drivers, responses to questions “Is there an upper limit for participation in the AIP?”, “Are alcohol-addicted rivers eligible for the AIP?”, “If yes, are there special conditions for alcohol-addicted drivers?” and – if there are special conditions – “If yes, how are alcohol-addicted drivers detected?” are combined, summarized and presented in table 5.3.4.1:

Table 5.3.4.1: How are international alcohol interlock programs dealing with alcohol addicted drivers?

Jurisdiction	**(1) Is there an upper limit for participation in the AIP?**	**(2) Are alcohol addicted drivers eligible for the AIP?**	**(3) If yes – are there special conditions for addicted drivers?**	**(4) If yes, how are addicted drivers detected?**
South Australia	**No**	**Yes**	**No**	
Wisconsin	**No**	**Yes**	**No**	-
Victoria	**No**	**Yes**	**No**	-
New Hampshire	**No**	**Yes**	**No**	-
New Jersey	**No**	**Yes**	**No**	-
Alberta	**No**	**Yes**	**Yes**	During AIP: by BAC level
California	**No**	**Yes**	**No**	-
Florida	**No**	**Yes**	**Yes**	Before and during AIP: Special medical examination
Manitoba	**No**	**Yes**	**Yes**	Before and during AIP Alcohol/drug assessment
Missouri	**No**	**Yes**	**Yes**	Before AIP: Analysis of driving record During AIP: non-compliance
New Mexico	**No**	**Yes**	**No**	-
Nova Scotia	**No**	**Yes**	**Yes**	During AIP: Non-compliance
Ontario	**No**	**Yes**	**Yes**	Before AIP: Assessment for all DUI drivers
Oregon	**No**	**Yes**	**No**	
South Carolina	**No**	**Yes**	**No**	-
Sweden	**No**	**Yes**	**No**	-
France	**Yes**	**No**	**No**	-
Finland	**No**	**Yes**	**No**	-
Belgium	**No**	**Yes**	**No**	-
Washington	**No**	**Yes**	**Yes**	Before and during AIP: Assessment by substance abuse professionals
Utah	**No**	**Yes**	**-**	
Total	**Yes: 1 No: 20**	**Yes: 20 No: 1**	**Yes: 7 No: 13**	

The columns of table 5.3.4.1 are numbered from 1 – 4 according to the questions asked in the questionnaire. The following more detailed information refers to the summary given in columns 1 – 4 of table 5.3.4.1.

(1) Is there an upper limit for participation in the AIP?

Most jurisdictions do not apply an upper BAC limit to decide whether a driver may participate in the AIP. The reasoning is best represented by that of South Australia:

"Setting an upper limit would place a restriction on some drivers who had drunk too much alcohol when caught by Police. Once the level is above BAC 0.15 the level of driving is impaired. A mandatory AIP effectively restricts those drivers from driving after excessive alcohol consumption. If very high BAC limits were imposed to restrict the use of a mandatory AIP the drivers would most likely still drive with a very high risk of causing an injury crash."

An additional comment on the question of an upper BAC limit from Florida might help understand the philosophy of that system:

"To provide intervention to drivers that have a blood alcohol level that is almost twice the limit of the law in Florida. There is a lower limit for program participation: ≥1,5 ‰. The Florida office has been working with drivers that have substance abuse issues for many years. Respondent has worked indirectly as an administrator with problem drivers and drivers with substance abuse issues for over 26 years. The office regulate a program for drivers that are multiple offenders that have provisions in place to allow them to apply for consideration for early reinstatement. The program is called the Special Supervision Services program where the Florida licensed DUI programs assess the client to determine if they are a good fit for the program. The client has a specific amount of hard time suspension and are required to validate that there is a hardship. If the client is determined to be a good fit he must report to the DUI program monthly to discuss his sobriety, participate in self help groups, have the IID installed for a specific time frame, and be subject to random chemical testing."

The Nova Scotia philosophy is well in line with that of Florida:

"The Nova Scotia program philosophy is that we should let as many people in the program as possible so that we can manage their drink-driving behavior. By refusing a client admission into the program, there is a risk that they will continue to drive anyhow, and we will not have the ability to manage/monitor them. The current research/evidence suggests that interlock devices are effective in preventing impaired driving while they are installed, so we would prefer to have "risky" drivers in the program rather than not. At the end of the day, the "riskier" the client is, the more reason we have to want them in the interlock program."

Hence, the most widespread reasoning is that drivers not mandated to and thus excluded from AIP participation would keep driving without a license. This would in consequence lead to dropping out of the system with incalculable safety risks.

The only upper BAC limit was set at 2,0 ‰ in France during the pilot program in order to avoid problematic situations with addicted drivers. (Evaluations have shown that the question of addiction only plays a role after the device is de-installed). Whether or not and if yes which kind of problems were experienced with alcohol dependent drivers, will be covered in sections 5.3.4.2.

On the other hand, it is not totally clear which risk jurisdictions setting an upper limit would attribute to this group of drivers as long as they are in the AIP. Clearly enough, as long as a driver is only using an interlock equipped car he/she will not be able to drive under the

influence of alcohol. Section 5.3.4.2 is touching the question whether those drivers are likely to present specific impairments as a consequence of their alcohol addiction and hence pose a higher safety risk than non-dependent drivers.

Given the information that the only jurisdiction with an upper BAC limit (France) is likely to change the limit beginning 2011, there will be no jurisdiction in the current sample applying an upper limit.

Upper BAC limits are common in international legislations. Most commonly, the background was evidence on impairment beyond the selected BAC limit; however, impairment is not necessarily corresponding to the individual BAC level. The selection of the upper BAC limit does not have anything to do with the expectation that individuals exceeding that limit would be alcohol addicted; the risk associated with exceeding the limit is often demonstrated by citing the Grand Rapids study (Borkenstein 1974) which showed increased risk of alcohol-related crashes and crash severity with increasing blood alcohol content.

On the other hand, it cannot be argued that high blood alcohol levels at the same time indicate alcohol dependence. Alcohol dependence is not necessarily reflected by blood alcohol content. The BAC at time of apprehension may be low for alcohol addicted drivers because they may have been apprehended at an earlier stage of an abusive drinking session.

Conclusion

High blood alcohol content does not necessarily indicate alcohol dependence. It does indicate higher risk of impairment.
An upper BAC limit would exclude the drivers with the highest risk potential from program participation. As a consequence, effectiveness of the program might be reduced. Therefore all jurisdictions in the overview either did not introduce an upper limit or will drop the limit.

(2) Are alcohol-addicted drivers eligible for the AIP?

There is only one jurisdiction clearly denying eligibility of AIP participation for alcohol addicted drivers: France (pilot program).

The introduction of the upper limit (at 2.0‰) was “due to caution with public opinion at the very beginning of the pilot program”; public opinion seemed to dislike the idea that addicted drivers would be able to continue driving. There was no scientific background for the introduction of an upper limit. Currently there are individual justice courts which have lowered the limit to 1.05 ‰. Discussion on the limit to be chosen are continuing with prosecutors of each justice court (the criteria will be a local affair). It is expected that the current upper limit will be dropped completely in the beginning of 2011. (Results from further inquiry during site visit in Annecy are presented in the appendix (A 3.1, p. 133 – 140)

All other jurisdictions in this study include alcohol addicted drivers in their AIP.

In the jurisdiction of California there is no special attention paid to addicted drivers; they are required to comply with the interlock program just as any driver with a DUI conviction would. Addicted divers are eligible through a court requirement or through the license reinstatement process if they have two or more alcohol-related enforcement contacts regardless of alcohol content in Missouri.
In New Mexico an alcohol addicted driver is facing the same sanctions for either a criminal or administrative revocation of his driving privilege. Stricter conditions of release or increased treatment mandates based on their court ordered evaluation or mandatory treatment based on the level of their offense may be imposed. They may also face stricter sanctions or increased treatment based on their record of participation with the interlock.
In Sweden alcohol addicted drivers are eligible for participation in the AIP combined with driving while intoxicated (DWI) – it is expected that they will be eligible even without a DWI offence by 2011.
Finland: As Finland does not conduct any assessment before, during or after AIP participation, addicted drivers cannot be detected. However, if an alcohol addicted driver happens to join the AIP, he/she is not treated differently compared to other program participants – "the conditions are the same as for any participant". Obviously Finland is planning an even more liberal approach by "a plan to change the driving license legislation so that alcohol dependence is not an impediment for getting a driving license if the person drives a vehicle with an alcohol interlock. Then the driving license would have a special code on it for this provision. In addition, the plan is to allow doctors to recommend an alcohol interlock to a driver (by informing the police) instead of suggesting withdrawal of the license". Alcohol addicted drivers should not posses a driving license in the first place, based on the driving license legislation and the screening procedure. However, if a driver with a valid driving license is caught driving under the influence, instead of a driving ban he/she can ask for a conditional right to drive (= participating in the AIP). If, after all, an "alcohol addicted" driver is participating in the AIP, the conditions are the same as for any participant. The "addicted" drivers are not detected during the AIP."

Conclusion:

(1) The great majority of jurisdictions (20 out of 21 in this overview) accept alcohol dependent drivers as eligible for participation in the AIP. The only jurisdiction restricting participation to a BAC < 2 ‰ (assuming that drivers > 2 ‰ are likely to be addicted) will change their AIP by the end of 2010 and include addicted drivers.
(2) The reasoning for the eligibility of addicted drivers varies from the legal conditions requiring all participants to be treated equally (i.e. to comply with program requirements) to imposing stricter requirements if necessary (see chapter 5.3.4.2 for more details)
(3) Alcohol addicted drivers are treated differently – from no specific attention to comprehensive treatment programs (see chapter 5.3.4.2)

(3) If alcohol-addicted drivers are eligible for the AIP – are there special conditions for them?

In two of the four European jurisdictions in this survey (Belgium, France, Finland, Sweden) addicted drivers are dealt with as follows:

France: drivers are included in a special AIP with biological and medical follow up (in future: bio-marker assessment). In this jurisdiction **only those may continue to participate in the AIP who have demonstrated a sufficient period of abstinence**, and are able to control their consumption (as evidenced through interlock device data recording).

Sweden: Medical check-ups are conducted every three months; there is no therapeutic program. **If a driver appears to be addicted after the first year of the 2 year program, he will be excluded.** It is underlined by the respondent that "the main reason for AIP is traffic safety and not rehabilitation".

Some *US jurisdictions* differ substantially from the approach chosen by European ones:

Florida: Addicted drivers in the ignition interlock device program are **required to report monthly to a DUI program for monitoring** of their case management plan and the client is referred to treatment.

Missouri: If addicted drivers are under court supervision then they may also be **required to attend counseling for substance abuse** as part of their probation.

Washington (State): The special conditions for addicted drivers are treatment plans specific to each driver and their needs. An assessment determines the severity of the alcohol/substance problem. If the person is assessed as having no significant problem the driver is still required to attend a drug/alcohol education class. Those **assessed as having a dependence upon or addiction to drugs or alcohol are required to go through a treatment program**. The program varies relative to the assessment. For example some drivers have to have 21 days of inpatient treatment others have programs lasting several years. They are encouraged to get the new interlock license, i.e. **they will not get an unrestricted license**.

Canadian jurisdictions:

Alberta: Drivers assessed as being chemically dependent must abstain from the consumption of alcohol/drugs and **provide proof of that abstinence in order to obtain/maintain an unrestricted driver's license**.

Manitoba: All convicted impaired drivers must undergo an alcohol/drug assessment at the Addictions Foundation of Manitoba. Drivers assessed as being chemically dependent must abstain from the consumption of alcohol/drugs and **provide proof of that abstinence in order to obtain/maintain a driver's license**. If alcohol-dependent drivers are participating in the interlock program, they are advised that their participation is being monitored, all breath samples are their responsibility, and any alcohol readings may result in further licensing sanctions. All this applies before and during AIP.

Nova Scotia: If there are additional issues/problems with a driver, the agency will be made aware of them through the medical community, the client's addictions counselor (which is a

mandatory component of the interlock program), through the client's self-reporting, or through reports from the public or law enforcement.
Furthermore, since the clients' interlock data are reviewed, the agency is able to determine whether the clients continue to attempt to drive their vehicle while impaired. **If they continue to drive with a BAC, they will not be allowed to drive without the interlock device**.

Ontario: The driver must complete an assessment, regardless of using an interlock; the assessment is conducted before they would be eligible . A negative finding could prevent reinstatement of an unrestricted license.

Australian jurisdictions:

South Australia: Drivers who are tested positive to be alcohol addicted cannot obtain a general unrestricted driving license. They are able to obtain and remain in the AIP to meet their transport needs. **To gain a general unrestricted driving license the person must be retested for alcohol addiction and show a negative result**.

Victoria: Literal citation of response: "NO would be silly as **these drivers are the ones who really need the interlock, otherwise will simply drive whilst on the therapeutic program**."

Conclusions

The majority of jurisdictions (13 out of 21) do not require alcohol-addicted drivers to meet special conditions before entering the AIP, i.e. other conditions than those imposed on all DUI drivers.

If jurisdictions require dependent drivers to meet special conditions 7 out of 21 do so before and/or during the AIP.

Addicted drivers are detected by medical examination, BAC levels, an alcohol assessment, the analysis of driving records, or a professional (substance abuse) assessment.

As a consequence of non-compliance a driver may be referred to therapy and/or extension of the AIP may be imposed; an unrestricted license will only be issued on proof of abstinence.

(4) If there are special conditions for alcohol-addicted drivers – how are those drivers detected?

Whereas there is no systematic assessment (other than that conducted for all DUI drivers on the program) of any kind in Belgium, Finland, California, South Carolina, and New Jersey other jurisdictions report that one or more of several methods of detection of alcohol addiction

are being applied. In New Hampshire the jurisdiction is not interested in whether the driver is alcohol addicted but assesses her/his habitual drinking.

A number of jurisdictions explain their procedure and the consequences based on the outcome of the assessment in some detail[5]:

Alberta: The Alberta Transportation Safety Board does not classify a driver as alcohol-dependent. What the Board does is place a restriction on the persons driver's license such as having the ignition interlock installed in the Appellant's vehicle, at their own expense, the driver is monitored and if they have any fails or warnings the Board receives a monthly report notifying them of the number of failures or warnings. Depending on the outcome the Board will call the person before the Board again, so they can discuss what the problems are, the person may also have extra time added to the time they must stay on the ignition interlock device.

Florida: Drivers are required to complete a driver risk inventory (DRI) and given a psychosocial evaluation by a certified DUI evaluator. Using the DRI the evaluator assesses the driver to determine if intervention is recommended to increase the driver's ability to maintain sobriety.

Drivers that are required to have the ignition interlock device installed as a condition of reinstatement or required to be report for a download monthly for the first 3 months. After the first 3 months if there have been no violations and the driver is not under revocation for multiple DUI convictions he can opt to report bi-monthly for duration of the IID (Ignition Interlock Device) requirement. Additional consequences are listed below:

- Any two breath tests above the 0.5 ‰ breath alcohol level upon initial startup of the vehicle
- Any refusal to submit to a required rolling retest
- Any retest above the 0.5 ‰ breath alcohol level
- Any evidence of equipment tampering

1. The first offense – Report to the DUI Program for a counseling to determine why the client is having problems with the device.
2. The second offense – Report to the DUI Program monthly for the duration of the IID time for monitoring of progression using the device. A case management plan is developed to assist in the drivers efforts to maintain sobriety while driving.
3. The third or subsequent offense – Report to the DUI Program for referral to treatment, IID time extended at least one month and driver continues to report monthly for monitoring.

Manitoba: An alcohol/drug assessment is required before any license reinstatement eligibility. The assessment is required legislatively and is conducted by an independent agency.

Nova Scotia: There are many potential consequences that follow once we have identified a driver as likely being dependent on alcohol, or having a propensity to engage in alcohol-impaired driving. The following is a non-exhaustive list of some of those remedies:

1. License suspension
2. Addiction counseling
3. The requirement to provide medical proof of fitness to drive
4. A zero blood alcohol restriction on their driver's license
5. Participation in the alcohol ignition interlock program

[5] Mostly, the original responses and comments are cited directly from the questionnaire or from email communication based on the questionnaire responses.

6. A restricted driver's license that only allows the client to drive for certain purposes (i.e. work).

Under the Nova Scotia legislation, the driver may be restricted in any way that is seen fit, so the possible outcomes are essentially limitless.

Alcohol-dependent drivers are not prohibited from participating in interlock. In fact, they are encouraged to do so. The philosophy is that the "worse" the person's alcohol problem is, the more important it is to get them into the program. In terms of other consequences, there may be insurance repercussions for the client as well.

Washington: Assessment by substance abuse professionals is required whenever a drug or alcohol related offense occurs. Physicians can also report alcohol addictions The consequences regarding AIP: The assessment determines the severity of the alcohol/substance problem. Those assessed as having a dependence upon or addiction to drugs or alcohol are required to go through a treatment program. The program varies relative to the assessment. For example some drivers have to have 21 days of inpatient treatment others have programs lasting several years. They are encouraged to get the new interlock license.

Summary

For the purpose of the present report the responses from jurisdictions paying at least some attention to the question of detecting alcohol-addicted drivers aiming at imposing special conditions are summarized.

1. Detecting addicted drivers by special medical examination: Florida, Manitoba, Nova Scotia, Washington
2. Detecting addicted drivers by analysis of driving records: Missouri, Nova Scotia,
3. Detecting addicted drivers by police/administrative assessment Manitoba, Nova Scotia
4. Detecting addicted drivers through classification by BAC at time of apprehension: Alberta, Nova Scotia, Ontario, Washington.
5. Combination of methods: Manitoba, Nova Scotia, Washington

In all cases the outcome of any type of assessment has no effect on participation in the AIP. In most cases it will lead to additional educational courses or treatment, sometimes as part of the AIP, sometimes as a measure apart from the AIP. It may also result in an extension of the AIP device installation period (Alberta). In other jurisdictions assessment is needed before reinstatement of the normal license (without restrictions like AIP).

Four jurisdictions apply a special medical examination, partly combined with other methods. Most jurisdictions do not apply a medical assessment but use other means of detecting addiction (analysis of driving records, police or administrative assessment, or by BAC classification at time of apprehension.

In terms of the eligibility of addicted drivers after one of the above mentioned methods of detection the statement from Nova Scotia is repeated: ***"The philosophy is that the "worse" the person's alcohol problem is, the more important it is to get them into the program."***

The reasons for implementing means of detection of addicted drivers are: to be able to deny participation in the AIP, to be able to offer, or mandate further measures (e.g. treatment), to be able to offer special guidance, to prevent unlicensed driving by addicted drivers; some jurisdictions simply have that requirement in their legislation.

Conclusions

1. **Detection measures differ depending on the background of the "philosophy" of the AIP and the legislation.**
2. **Detection of alcohol addicted drivers primarily serves the purpose of being able to offer adequate measures (licensing, therapy, extension of AIP period etc.) in order to either reduce the driving risk of addicted drivers or prevent unlicensed driving; some jurisdictions combine safety and DUI prevention with health aspects.**
3. **Early detection of the drinking problem (e.g. addictive drinking) reduces the risk potential of multiple driving under the influence offenses of previously detected drivers if referred to individual measures.**
4. **Detection of alcohol-addicted drivers does not necessarily aim at excluding them from participation in the interlock program.**

5.3.4.2 Consequences of alcohol dependence related to AIP: Problems and interventions

There is some scientific evidence that addictive drinking may cause severe physical and mental (cognitive) deficiencies with the potential to impair driving behavior even when driving sober at zero, or low BAC (cf. section 3). The question was asked, whether this knowledge was discussed (e.g. with psychiatric experts) before the implementation of the AIP in the specific jurisdiction.

Responses are listed in table 5.3.4.2. – columns 1 – 3 are chosen according to the corresponding questions in the questionnaire.

Table 5.3.4.2 Consequences of alcohol addiction discussed, problems and interventions

Jurisdiction	(1) Have deficiencies of sober alcohol addicted drivers been discussed?	(2) Have there been problems with alcohol-addicted drivers?	(3) Have there been interventions to reduce problems?
South Australia	**Yes**	**No**	**No**
Wisconsin	**No**	**Yes**	**Yes**
Victoria	**Yes**	**No**	**No**
New Hampshire	**No**	**No**	**No**
New Jersey	**No**	**No**	**No**
Alberta	**No**	**No**	**Yes**
California	**No**	**No**	**No**
Florida	**-**	**Yes**	**Yes**
Manitoba	**No**	**No**	**Yes**
Missouri	**No**	**No**	**No**
New Mexico	**Yes**	**No**	**Yes**
Nova Scotia	**No**	**No**	**Yes**
Ontario	**No**	**No**	**No**
Oregon	**No**	**No**	**No**
South Carolina	**No**	**No**	**No**
Sweden	**Yes**	**Yes**	**No**
France	**Yes**	**No**	**Yes**
Finland	**No**	**No**	**-**
Belgium	**No**	**-**	**-**
Washington	**Yes**	**No**	**Yes**
Utah	**-**	**-**	**-**
Total	**Yes 6** **No 13**	**Yes 3** **No 16**	**Yes 8** **No 10**
No response	**2**	**3**	**8**

(1) Have deficiencies of sober alcohol addicted drivers been discussed?

Generally speaking, the amount of drivers with mental and/or physical deficiencies as a consequence of illness, harm or injury is unknown to most jurisdictions as there is no general medical and/or psychological assessment carried out. Hence, if it is the only goal of an AIP to restrict drinking and driving and reduce the number of traffic victims, regardless of potential risk resulting from other risk factors (including those that are likely to be a consequence of long term excessive alcohol consumption) there is no need for considering potential secondary impairment from addictive drinking. Consequently, this philosophy acknowledges the increasing amount of international interlock programs allowing addicted drivers to be on the program.

In total, six jurisdictions respond having discussed the problem of potential impairment of long-term addicted drivers. The impairment displayed by addictive sober drivers is judged not

to be different from the impairment of elderly drivers, young adolescents, drivers with a variety of health problems etc. as long as these impairments are not detected.

Of those responding "no" to this question, some have added a comment. If the jurisdiction in Nova Scotia is made aware of such additional concerns, they will require the clients to provide them with medical evidence that they are fit to drive from a medical perspective. In Ontario, a driver must take a medical assessment and if appropriate treatment after a conviction. In France no reason is seen to "block the process" as it is the same situation as with elderly drivers, handicapped drivers and others with limitations of their fitness to drive (which is one of the reason for the French jurisdiction to drop their upper BAC limit in the future).

In summarizing, most jurisdictions are not concerned about possible additional impairment resulting from addictive drinking as long as drivers do not drive after drinking and fulfill the requirements of the AIP.

Conclusion

Although the impairment potential of sober addictive drivers is not questioned, most jurisdictions ever having discussed the problem prior to the implementation of the AIP encourage to have them in the program in order to reduce risk.
Sober addictive drivers are considered being similar to elderly drivers, handicapped drivers and others with limitations of their fitness to drive.

(2) Have there been problems with alcohol-addicted drivers?
(3) Have there been interventions to reduce problems?

As the issue of problems with alcohol addicted drivers directly leads to the question of whether any kind of intervention is applied to reduce the specific problems, responses to both questions are commonly discussed in this section.

It seems somewhat surprising that only three jurisdictions report problems with alcohol addicted drivers whereas eight respond that there are interventions to reduce problems. This is not contradictory as those jurisdictions not reporting problems do have measures to cope with problems should they arise.

Whether problems with alcohol addicted drivers are reported or not certainly depends on several preconditions. Most importantly the design and structure of the program may even aim at detecting drivers with such problems in order to be able to offer assistance through rehabilitation or therapeutic measures. Jurisdictions differ as to the time when detecting problems: generally, they do not detect problems before imposing an AIP. Some do so while the interlock is installed (by the data provided) and consequently intervene.

Problems with alcohol addicted drivers are reported:

Wisconsin: "The non-compliance rate has been abysmal since 1993 when the interlock program began –at best, it was an estimated compliance at 20%." Exact figures are unknown since interlock vendors are not required to report their client lists to the Department of Transport. Reasons for the low compliance rate are many (e.g. administrative loopholes in the old interlock law, bad attitude/lack of follow-through by courts, absence of precise penalties for non-compliance or tampering/circumvention, high cost of interlock installation/leasing). Wisconsin is planning to change the program settings as a consequence of experience with addicted drivers.

Missouri: Experienced multiple problems with drivers on the program – irrespective of an alcohol-dependence. Problems range from ability to pay for the device, medical conditions that prevent adequate breath samples, circumvention of the devices, etc. This is an ongoing issue. Currently a form that can be used for medical issues is being developed. Cooperation with ignition interlock companies in case of complaints about devices or issues with circumvention attempts.

Other US jurisdictions do not report problems with alcohol addicted drivers, but multiple problems with all DUI drivers ranging from ability to pay for the device, medical conditions that prevent adequate breath samples, circumvention of the devices, etc.
The European jurisdictions have a different approach to cope with possible problems: Finland does not report serious problems because addicted drivers simply are not detected. Sweden excludes addicted drivers from the program after one year of participation because they are judged not to be able to fulfill the strict requirements for the AIP. In France the type of problems will lead to the use of bio-marker assessment in order to determine further measures. According to the design of their program, in Belgium addicted drivers will not be detected.

In Canadian jurisdictions some drivers on the program continue to use alcohol and are dealt with in a number of manners including being taken off the program or extending the program (Alberta). Interventions to reduce problems were introduced through a mandatory component. In Nova Scotia the alcohol interlock program is meant to force alcohol-addicted drivers to get the treatment/counseling that they need because treatment is required as part of the Nova Scotia interlock program (typically, one counseling session every 2 months with the authority to require more or less frequent counseling depending upon the client).

Summary

The problems with alcohol-addicted drivers have been described as:

- absence of precise penalties for non-compliance
- tampering/circumvention
- high cost of interlock installation/leasing[6]
- attempt to start vehicles with a BAC level
- medical conditions that prevent adequate breath samples

[6] This argument is obviously used often in the public/political discussion on interlocks; it has been shown that the average cost of an interlock device - either by leasing or acquisition - amounts to the cost of one drink a day

All the described problems are the same as for non-addictive drivers.

The interventions to reduce these problems offered by the jurisdictions in the present sample are:

- take steps to suspend the license until such time that the driver has achieved a reasonable length of abstinence
- take driver off the program or extend the program
- court can impose stricter sanctions or additional treatment
- counseling and/or treatment
- driver may be referred for further assessment or rehabilitation/treatment

Conclusion

The great majority of jurisdictions do not report specific problems with addicted drivers. If any, the reported problems are the same as for all DUI drivers.

Interventions lead either to excluding addicted drivers from (further) participation (and hence denying an ordinary driving license) or extending the interlock duration. However, this is the same procedure for all DUI drivers on the program. Special attention to addictive drivers may include assessment, counseling and treatment.

5.3.5 Estimates of the effect of alcohol interlock programs

Regardless of any evaluation respondents were asked to (subjectively) estimate the total effect of the Alcohol Interlock Program on road safety in their jurisdiction (Table 5.3.5).

Table 5.3.5 Estimates of the effect of alcohol interlock programs

	9	8	7	6	5	4	3	2	1
Jurisdiction	**High**				**Medium**				**Low**
South Australia[7]						**X**			
Wisconsin								**X**	
Victoria[8]									
New Hampshire							**X**		
New Jersey								**X**	
Alberta	**X**								
California				**X**					
Florida	**X**								
Manitoba				**X**					
Missouri				**X**					
New Mexico			**X**						
Nova Scotia[9]	-	-	-	-	-	-	-	-	-
Ontario						**X**			
Oregon[10]									
South Carolina			**X**						
Sweden	**X**[11]								
France	**X**								
Finland					**X**[12]				
Belgium	-	-	-	-	-	-	-	-	-
Washington				**X**					
Utah									**X**
Number of ratings	4	0	2	4	1	2	1	2	1
Average score	**10**				**1**	**6**			

[7] Note that this is an estimate for the new AIP mandatory program. For maximum effect on road safety all first offenders should be required to have an interlock installed

[8] " given we have about 7 thousand interlocks fitted currently and about 16 thousand drink drive offenders each year and about 4 million license holders then it could be expected that the program is starting to have a serious impact

[9] Response: not prepared to answer this question. The program was implemented in the fall of 2008, and there is enough data and/or experience with the program or the clients to be able to say one way or the other.

[10] No estimate at all

[11] For those who have fulfilled the program

[12] The number of participants is not that big yet (however, it's growing the whole time), but for those participating the AIP has been working well and the drop-out rate is very small, nearly non-existent.

Obviously some respondents had difficulties estimating the overall effect of their AIP. This may be mainly caused by a critical attitude towards the program and the way it is run (Utah), or the lack of sufficient evaluation / recidivism data, etc.

The number of "high" estimates (4) exceeds the number of "low" estimates (1); this is also valid when combining 1-4 estimates (lower than medium estimates) and the 6-9 estimates (higher than medium estimates): 10 respondents estimate their AIP to have an effect better than medium whereas 6 respondents judge the effect of their AIP to be lower than medium.

Jurisdictions with the higher than medium estimate are:

Alberta
Florida
Sweden
France
New Mexico
South Carolina
California
Manitoba
Missouri
Washington

Jurisdictions with a lower than medium estimate are:

Utah
Wisconsin
New Jersey
New Hampshire
South Australia
Ontario

Conclusion

The majority of the respondents estimate the effect of their AIP higher than "medium". Alberta, Florida, Sweden and France estimate the effect of their AIP as being "high".

Lower estimates may reflect shortcomings of the AIP which, however, have been identified by the respondents from some jurisdictions and may lead to improvement in the future.

5.3.6 Estimates of the effect of other measures to reduce drinking and driving

In addition to the estimate of the AIP in each jurisdiction respondents were asked to estimate the impact of other measures on reducing drinking and driving, such as:

License suspension/revocation
Fine
Prison
Long term therapy
Educational program
Regular medical examination
Other

Responses/estimates are presented in table 5.3.6.

Table 5.3.6 Estimate of impact of other measures (Note: scaling from „high" to "low": 5=high, medium=3, low=1)

Measure → **Jurisdiction ↓**	**License suspension/revocation**	**Fine**	**Prison**	**Long term therapy**	**Educational program**	**Regular medical examination**	**Other**	**Estimate of AIP Effect (after scale transfer)**
South Australia	1	1	1	4	3	4	4[13]	3
Wisconsin	3	4	4	2	2	1	-	1
Victoria	5	3	5	-	1	1	-	-
New Hampshire	5	4	5	4	3	3	-	1
New Jersey	3	3	5	4	4	1	-	1
Alberta	3	3	1	3	3	1	-	5
California	4	2	1	3	3	1	-	3
Florida	5	1	1	1	5	1	-	5
Manitoba	4	4	4	4	4	1	-	3
Missouri	3	3	3	5	3	1		3
New Mexico	2	2	2	3	3	1	5[14]	5
Nova Scotia								-
Ontario	4	4	2	2	4	3	-	3
Oregon								-
South Carolina	4	2	4	4	3	1	-	5
Sweden								5
France	3	2	2	3	4	3	-	5
Finland	4	2	4	3	2	3		3
Belgium	-	-	-	-	-	-	-	-
Washington								3
Utah	1	1	1	3	3	1	-	1
Total	**54**	**41**	**45**	**48**	**50**	**28**		**58**
Average/mean	**3,38**	**2,56**	**2,81**	**3,00**	**3,13**	**1,75**		**3,41**

[13] Extending interlock to first time offenders
[14] Enforcement, vehicle seizure

Comment

Although not checked for statistical significance, the measure ranked of lowest effect is the "regular medical examination", the one ranked highest is "license suspension" followed by "educational measures" and "long term therapy". "Prison" as a measure is ranked more effective than "fine".

In addition, the estimates of 5.3.5 (effect of the AIP) were compared to the estimates of the effects other measures (last column to the right of table 5.3.6). Despite the fact that a minority of jurisdictions estimate their AIP as having a low effect the average estimate of the AIP effect is higher (though the likelihood for statistical significance is low) than that for all other measures.

Conclusion

The estimates of the effect of various measures to combat DUI show that Alcohol Interlock Programs are ranking high on average; their effect is estimated at least as high as the effect of license measures. License measures, however, immobilize the individual – interlock programs ascertain mobility.
There is also some indication that there might be a correlation between the estimate of the effect of the AIP and the attitude of respondents; those respondents who criticize the lack of communication and information on program functioning and development might also be more critical towards the effect of the AIP. Hence, any AIP should provide a responsible unit to ensure continuous program information and communication.

6. Answers to research questions and conclusions

For the purpose of facilitating the overview of answers to the research questions asked (chapter 2) questions and answers are given in a table (table 6)

Table 6: Research questions and answers

Research question	Answer/Conclusion
Who is responsible for imposing the AIP and which criteria determine participation?	Responsibility varies from judicial (court ordered) to administrative (license measure); in a variety of jurisdictions a change in responsibility has occurred over time. The criteria determining participation vary according to the legal conditions in the national/-state jurisdictions. The main criterion is a DUI offense (exceeding the legal limit, or twice the legal limit) or multiple DUI offenses. Some jurisdictions require an assessment/screening prior to relicensing regardless of AIP participation. First, from the information given on the judicial and administrative frames it may be concluded that both systems are judged efficient by a number of jurisdictions. Most importantly what can be learned from the experience in various jurisdictions is that there must be close cooperation and communication between the justice courts and the administration (and this ought to be added: with any service provider as well). **Lack of communication and cooperation may result in frustration of those involved and in the long run lead to reduced effectiveness of the program**.
Are alcohol addicted drivers eligible for participation?	**Yes; all jurisdictions except one** (20 out of 21 in this overview) **accept alcohol dependent drivers as eligible for participation in the AIP**. Alcohol addicted drivers are treated differently – from no specific attention at all to comprehensive treatment programs (see chapter 5.3.4.1)
If yes: • what are the reasons?	The reasoning for the eligibility of addicted drivers varies from the legal conditions requiring <u>all participants</u> to be treated equally (i.e. to comply with program requirements) to imposing stricter requirements if necessary (see chapter 5.3.4.1 for more detail). Some jurisdictions argue that **alcohol-addicted drivers are the group with the highest potential risk and must consequently be**

encouraged to have an interlock installed. Excluding them from the system would lead to unlicensed driving and neglect of their future risk in traffic.

- has there been any discussion about the participation of alcohol addicted persons (with psychiatrists, other medical professionals)

Most jurisdictions have not discussed this question prior to the implementation of their program; they are not concerned about possible additional impairment resulting from addictive drinking as long as drivers do not drive after drinking and fulfill the requirements of the AIP. In cases of non-compliance further judicial and/or licensing measures are taken, in many jurisdictions also treatment referrals. Although the impairment potential of sober addictive drivers is not questioned, **most jurisdictions ever having discussed the problem prior to the implementation of the AIP encourage to have alcohol-addicted drivers in the program in order to reduce risk**.

- do they have to meet special conditions? What are these conditions (special programs?)

Seven jurisdictions require addicted drivers to meet special conditions prior to program participation and/or during the AIP (5 jurisdictions). The conditions are (choice):

- medical checks
- alcohol/drug abuse screening
- monthly reporting, stricter monitoring
- Attend counseling/educational programs
- Court/probation/parole assessments
- regular contact to addiction counselor
-extension of AIP period

- how are those drivers detected?

- Detecting addicted drivers by special medical examination: Florida, Manitoba, Nova Scotia, Washington
- Detecting addicted drivers by analysis of driving records: Missouri, Nova Scotia,
- Detecting addicted drivers by police/administrative assessment Manitoba, Nova Scotia
- Detecting addicted drivers through classification by BAC at time of apprehension: Alberta, Nova Scotia, Ontario, Washington.
- Combination of methods: Manitoba, , Nova Scotia, Washington

In all cases the outcome of any type of assessment has no effect on participation in the AIP.

If they do not have to meet special conditions:

- why not?

- because <u>all</u> convicted impaired drivers must undergo an alcohol/drug assessment (i.e. including addicted drivers)
- because all DUI offenders must be treated equally
- because they are not detected (and the jurisdiction does not require detection)

which other measures have been introduced for addicted drivers?

Assessment/screening, counseling, treatment, rehabilitation schemes, extending the AIP period, license restrictions

What are the experiences with alcohol addicted drivers participating in AIP?

Whereas 3 jurisdictions report problems with addicted drivers, **16 indicate that there were no problems**; 8 jurisdictions provide intervention in case of problems, 10 do not**.**

- problem is the absence of precise penalties for non-compliance
- tampering/circumvention
- problematic high cost of interlock installation/leasing[15]
- attempts to start vehicles with a BAC level
- medical conditions that prevent adequate breath samples

The chosen interventions are:

- take steps to suspend the license until such time that the driver has achieved a reasonable length of abstinence
- take driver off the program or extend the program
- court can impose stricter sanctions or additional treatment
- counseling and/or treatment
- driver may be referred for further assessment or rehabilitation/treatment

What are the upper limits for the different foreign AIP's and what arguments are used by choosing one or not?

- Which countries/states have an upper limit regarding the AIP?

In the sample of the present research there is **only one jurisdiction with an upper limit**: France. Currently the limit is set at 2.0 ‰ BAC.

- Why do they have it? How did they determine it?

The upper limit in France was introduced in a pilot program because the administrators wanted to avoid public discussion with a negative impact on program development; after information campaigns the understanding for an AIP has increased and it is

[15] This argument is obviously used often in the public/political discussion on interlocks; it has been shown that the average cost of an interlock device - either by leasing or acquisition - amounts to the cost of one drink a day

	likely that **the upper limit will be dropped in the future.**
Which countries/states don't have an upper limit and why not?	All except France have no upper limit. **The reasoning is "the 'riskier' the client is, the more reason we have to want them in the interlock program" in order to enhance safety.**
What are the effects of the foreign AIP's on road safety, especially for alcoholics, compared to other measures like license withdrawal?	Respondents in the present research obviously rated the effect of their AIP according to the experience they have. The **majority of the respondents estimate the effect of their AIP higher than "medium**". Alberta, Florida, Sweden and France estimate the effect of their AIP as being "high". Lower estimates may reflect shortcomings of the AIP which, however, have been described by the respondents from some jurisdictions and may lead to improvement in the future. The estimates of the effect of various measures to combat DUI show that Alcohol Interlock Programs are ranking high on average; their **effect is estimated at least equally high as the effect of license measures**. License measures, however, immobilize the individual – interlock programs ascertain mobility. There is also some indication that there might be a correlation between the estimate of the effect of the AIP and the attitude of respondents; those respondents who criticize the lack of communication and information on program functioning and development might also be more critical towards the effect of the AIP. Hence, any AIP should provide a responsible unit to ensure continuous program information and communication**.**
Recidivism rates in international jurisdictions	Recidivism rates have internationally decreased from the beginning of interlock applications to the current status; the total impact on traffic safety is not questioned. The **reduction of the relapse rate of AIP participants compared to controls (i.e. drivers whose license was withdrawn or otherwise invalidated) varies from 20 % to more than 90 % over the past 20 years**. Hence, AIPs are more effective compared to other measures like license

withdrawal/invalidation.

From the research in the present report it may be concluded that there is a high improvement potential for AIPs; if this improvement potential is realized even higher reductions of recidivism may be expected. The **introduction of an AIP oriented at best practice will consequently result in a higher impact on drivers and prevent future DUI**.

7 Conclusions

The main focus of the present report is the international experience with alcohol addicted drivers participating in alcohol ignition interlock programs in order to provide insight and answers to the following overall objectives as formulated by the Ministry of Transport:.

Overall:

(1) Well-founded conclusion regarding the total effect on road safety of introducing AIP also for alcoholics compared with not introducing AIP in the Netherlands.
(2) Advice regarding the necessity for and level of an upper BAC limit for participation in the AIP.

(1) Concerning the total effect of AIP on road safety in The Netherlands (1) this can only be estimated. According to international evaluation studies reduced recidivism of 75% was observed among drivers with an interlock compared to drivers whose license had been suspended. The measured reduced recidivism rates compared to other measures apply to all drivers on interlock programs, i.e. including alcohol-dependent drivers. According to a recent SWOV overview the AIP program would then have the potential to save three to five road deaths on an annual basis. This number of lives saved may increase up to eight to ten per year if drivers are not allowed to leave the program until they have evidenced compliance by separating drinking and driving. The annual benefits of the program could then amount to € 110 million (€ 11 million per life saved), while the costs are less than € 10 million. Moreover, the costs are paid by the participants themselves.
When judicial and administrative legal measures are tuned to the program, in the somewhat more distant future an annual saving of 30 to 35 road deaths seems possible. **Briefly, the total effect on road safety under the condition of an AIP is substantial and exceeds that of other measures.**
The literature clearly shows that interlocks are highly effective in reducing drink driving as long as the interlock device is installed in the vehicle. There is also evidence that addicted drivers may have an enhanced risk of specific impairment due to long term heavy drinking; it could not be evidenced, however, that this risk would exceed the risk of other high risk offender groups in traffic, such as young and inexperienced drivers, elderly drivers with age-related impairments, and drivers with a variety of medical conditions as long as these impairments are not detected.
On the other hand, **excluding alcohol-addicted drivers from an interlock program would lead to a variety of problems, such as continuing to drive under the influence, driving unlicensed, having little or no influence on their rehabilitation and thus enhance risk instead of reducing it.**

Briefly, the total effect on road safety under the condition of an AIP, also for alcohol addicted drivers, is substantial and exceeds that of other measures.

(2) The experience of 21 jurisdictions (in the USA, Canada, Australia and Europe) in the present overview shows that 20 of them do not apply an upper BAC limit to exclude potential participants from the program. Almost all jurisdictions allow alcohol addicted drivers to be on such a program, some even encourage their inclusion arguing for instance that their risk to continue driving unlicensed and “out of the system” would be substantially reduced. In one third of the jurisdictions addicted drivers are referred to additional measures parallel to the interlock programs to reduce their risk of relapse after the device is de-installed. However, the

great majority of jurisdictions do not report specific problems with addicted drivers. If any, the reported problems are the same as for all DUI drivers**.**

The impairment potential of sober addictive drivers is not questioned by the majority of the jurisdictions. Most jurisdictions ever having discussed the problem prior to the implementation of the AIP encourage to have them in the program in order to reduce risk. **Briefly, there is no need to introduce an upper BAC limit for the alcohol interlock program.**

The abovementioned main objectives had been differentiated by the following objectives:

a) Insight into foreign experience regarding alcohol addicted drivers participating in the AIP and arguments why they can participate or not.
b) Insight into foreign upper limits for the AIP and arguments why they have chosen an upper limit or not and regarding the height of it.
c) Insight into effects on the road safety of the foreign AIP's, especially for alcohol addicted drivers, compared to other measures like license withdrawal.
d) The total effect on road safety of introducing AIP also for alcoholics compared with not introducing AIP in the Netherlands.
e) Insight into the effects on road safety of a sober alcoholic driving with an alcohol interlock.

a) The great majority of jurisdictions (20 out of 21 in this overview) accept alcohol dependent drivers as eligible for participation in the AIP. The only jurisdiction restricting participation to a BAC < 2 ‰ (assuming that drivers > 2 ‰ are likely to be addicted) will change their AIP by the end of 2010 and include addicted drivers.
The reasoning for the eligibility of addicted drivers varies from the legal conditions requiring all participants to be treated equally (i.e. to comply with program requirements) to imposing stricter requirements if necessary. Alcohol addicted drivers are treated differently – from no specific attention to comprehensive treatment programs.

b) High blood alcohol content does not necessarily indicate alcohol dependence. It does indicate higher risk of impairment.
An upper BAC limit would exclude the drivers with the highest risk potential from program participation. As a consequence, effectiveness of the program might be reduced. Therefore all jurisdictions in the overview either did not introduce an upper limit or will drop the limit.

c) According to Bjerre & Thorsson (2007) full participation in an AIP has "favorable effects compared to conventional license revocation and would appear to be a useful tool for attaining lasting changes in the alcohol and driving habits of DWI offenders". This substantiated by almost all evaluation studies which demonstrate an up to 95% decrease of recidivism for AIP participants as compared to license withdrawal. Alcohol-addicted drivers have been part of the experimental groups showing that their average decrease on recidivism is likely to be comparable to that of all participants.

d) The question of the total effect has been answered above in (1) as it was one of the main objectives of the present research.

e) Although the impairment potential of sober addictive drivers is not questioned, most jurisdictions ever having discussed the problem prior to the implementation of the AIP encourage to have them in the program in order to reduce risk.
Sober addictive drivers are considered being similar to elderly drivers, handicapped drivers and others with limitations of their fitness to drive. There is absolutely no doubt in international research literature that a vehicle cannot be started by a driver with a blood alcohol content exceeding the preset system level. Hence, driving under the influence of alcohol is not the problem for addicted drivers with an interlock device fitted to their vehicle. The remaining problem may be that of risk resulting from impairment caused by long-term alcohol consumption. On one hand, impairment caused by medical conditions (e.g. such as the probability of a seizure in cases of epilepsy, cardiovascular diseases etc.), age-related health issues, non-compliance of patients with diabetes, and risk due to inexperience and behavioral deviations especially in young adolescents are usually generally accepted in "mobile societies"; there is no indication that those impairments differ from the risk associated with potential impairment of a sober alcoholic. On the other hand, excluding alcohol-addicted drivers from an interlock program would lead to a variety of problems, such as continuing to drive under the influence, driving unlicensed, having little or no influence on their rehabilitation and thus enhance risk instead of reducing it.

From the analysis of the literature on interlock development, programs and the inclusion of alcohol addicted drivers it can be concluded:

Driving under the influence of alcohol is associated with a variety of impairments of cognitive, psychomotor and other functions. The vast majority of such findings does not differentiate between alcohol-addicted and non-addicted drivers (simply because there were no attempts to detect addicted drivers). Evaluations of interlock programs do not differentiate between dependent and non-dependent drivers as well; Hence, the measured reduced recidivism rates compared to other measures apply to all drivers on interlock programs, i.e. including alcohol-dependent drivers.

Although there is evidence that only up to 50% of sober alcohol dependents may display a number of impairments associated with alcoholism as a consequence of long-term heavy drinking, there is no evidence that this specific group shows a higher risk potential than other risk groups of drivers, such as elderly drivers, adolescents (aged 16-24), and drivers with specific medical conditions as long as these impairments are not detected.

Responses of international jurisdictions to the question of the goals of their interlock programs lead to the conclusion that interlock program goals are similar but not identical. Most importantly, clearly defined goals will ease any attempt of evaluating the program; most jurisdictions in the present report have formulated one or more goals. Whether they differentiate reducing overall drinking and driving and reducing DUI in the high risk offender groups could make an important difference: applying an upper BAC limit and/or excluding alcohol addicted drivers would certainly be questionable if the jurisdiction is aiming at drinking and driving in high risk offender groups.

Regarding the necessity of evaluations it can be concluded that recent evaluation literature shows interlocks serving the purpose of inhibiting drivers from driving under the influence of pre-set amounts of alcohol as long as the device is installed. From this point of view, as high effectiveness of AIP for all DUI drivers is evidenced jurisdictions might take the decision to waive evaluation. On the other hand it may be argued that potential improvement of the program(s) is made difficult if no evaluation data are provided and accessible. On the other

hand it may be argued that any law and regulation, particularly those imposing restrictions of individual liberties should be evaluated not only for detection of improvement potential but for the purpose of demonstrating evidence to the public.

The introduction of an upper BAC limit would exclude the drivers with the highest DUI risk potential from program participation. As a consequence, effectiveness of the program might be reduced. Therefore all jurisdictions in the overview either did not introduce an upper limit or will drop the limit.

The great majority of jurisdictions (20 out of 21 in this overview) accept alcohol dependent drivers as eligible for participation in the AIP. The only jurisdiction restricting participation to a BAC < 2 ‰ (assuming that drivers > 2 ‰ are likely to be addicted) will change their AIP by the end of 2010 and include addicted drivers.
The reasoning for the eligibility of addicted drivers varies from the legal conditions requiring all participants to be treated equally (i.e. to comply with program requirements) to imposing stricter requirements if necessary (see chapter 5.3.4.5 for more details)
Alcohol addicted drivers are treated differently – from no specific attention to comprehensive treatment programs.

The majority of jurisdictions (13 out of 21) do not require alcohol-addicted drivers to meet special conditions before entering the AIP, i.e. other conditions than those imposed on all DUI drivers. If jurisdictions require dependent drivers to meet special conditions 7 out of 21 do so before and/or during the AIP. Addicted drivers are detected by medical examination, BAC levels, an alcohol assessment, the analysis of driving records, or a professional (substance abuse) assessment. As a consequence of non-compliance a driver may be referred to therapy and/or extension of the AIP may be imposed; in a few jurisdictions an unrestricted license will only be issued on proof of abstinence.

If there are special conditions to be met, detection measures differ depending on the background of the "philosophy" of the AIP and the legislation.
Detection of alcohol addicted drivers primarily serves the purpose of being able to offer adequate measures (licensing, therapy, extension of AIP period etc.) in order to either reduce the driving risk of addicted drivers or prevent unlicensed driving; some jurisdictions combine safety and DUI prevention with health aspects. Alcohol addicted drivers may not get their license reinstated if they do not comply; their AIP period may be extended (in some jurisdictions even unlimited).
Early detection of the drinking problem (e.g. addictive drinking) reduces the risk of further DUI offenses in previously detected drivers if referred to individual measures. Detection of alcohol-addicted drivers does only in 1 jurisdiction lead to excluding them from participation in the interlock program (France).

The impairment potential of sober addictive drivers is only recognized by a minority of jurisdictions. Most jurisdictions ever having discussed the problem prior to the implementation of the AIP encourage to have them in the program in order to reduce the risk of drunk driving. Sober addictive drivers are considered being similar to elderly drivers, adolescents (aged 16-24), and drivers with specific medical conditions as long as these impairments are not detected.

The great majority of jurisdictions do not report specific problems with addicted drivers. If any, the reported problems the same as for all DUI drivers. Interventions lead either to excluding addicted drivers from (further) participation (and hence denying an ordinary driving

license) or extending the interlock duration. However, this is the same procedure for all DUI drivers on the program. Special attention to addictive drivers may include assessment, counseling and treatment.

And finally, the majority of the respondents estimate the effect of their AIP higher than "medium". Alberta, Florida, Sweden and France estimate the effect of their AIP as being "high". The estimates of the effect of various measures to combat DUI show that Alcohol Interlock Programs are ranking high on average; their effect is estimated at least as high as the effect of license measures. License measures, however, immobilize the individual – interlock programs ascertain mobility.

The reduction of the relapse rate of AIP participants compared to controls (i.e. drivers whose license was withdrawn or otherwise invalidated) varies from 20 % to more than 90 % over the past 20 years. Hence, AIPs are more effective compared to other measures like license withdrawal/invalidation.

From the research in the present report it may be concluded that there is a high improvement potential for AIPs; if this improvement potential is realized even higher reductions of recidivism may be expected. The introduction of an AIP oriented at best practice will consequently result in a higher impact on drivers and prevent future DUI.

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