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Working paper:
Characteristics of Accident Involved Drivers Under the Influence,
Results from Confidential interviews

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EXECUTIVE SUMMARY

The European Commission decided to fund new studies into the causes of road accidents, independent of any legal investigations, especially when the causes of those accidents constituted criminal acts, as is the case when the driver is driving under the influence (DUI). Italian law permits such an absolute separation if and when a health professional assists their patient, as in the case of alleviation of Post-Traumatic Stress Disorder (PTSD). This intervention implies the description of every single detail of the traumatic event for a positive health outcome. Therefore, psychologists carried out confidential interviews with persons who were emotionally involved in 241 road accidents and were able to identify the characteristics of the drivers who caused these accidents.

In Italy, official road accident statistics are produced by the Police. However, the sample described here also includes accidents not recorded by the Police, allowing a separate analysis on a group of accidents not previously studied. The interviews also provide a detailed description of accidents that involve driving under the influence, which is not always recorded in the Police figures. When an accident had been recorded by the Police, the interviewees always described the official reports as a more or less appropriate account of the same accident. The comparison between the two accounts of the same group of accidents provides a statistical confirmation to a hypothetical estimate produced by researchers of the Epidemiology Department of the Italian Health Ministry on the real prevalence of DUI, much higher than reported by statistics derived from Police reports. In the course of a neutral offer of psychological support, those who were believed to have blood alcohol concentrations over the alcohol limit were involved in accidents twelve times more frequently than is reported in statistics derived from Police reports, where only 2% of the road accidents were attributed to the effect of alcohol.

Even greater is the differential for the prevalence of driving under the influence of drugs and medicines, which was only 0.3% in the official statistics, but was found in just over a quarter of cases in our sample. These confidential interviews also enable comparisons between the role of the impairing substance(s) as part of lifestyle (i.e. general use of substances), driving style (i.e. use of substances before driving), and as a contributing cause of the accident - all three for the same driver. These results provide a baseline for an evaluation of existing policies and their future adaptation to the drivers' characteristics. So far, only the improvements in Blood Alcohol Concentration detection appear to have produced some clear separation between drinking habits, drinking-and-driving behaviour and this cause of accidents. Unfortunately, this improvement has been stronger for the lighter drinkers, with little effect on the heavier drinkers. Even the impact on DUI of other impairing substances is widely ignored, as well as the worst mode of consumption - mixing alcohol, prescribed medicines, and illegal drugs. These results suggest that further research is needed to better understand the ways in which these factors affect DUI behaviour.

Examining the interviews, it appears that the law against DUI is seldom enforced, therefore hiding DUI in the official statistics. These guilty drivers prefer to be blamed for other accident causes, even when another driver is the real culprit, so distorting further the official statistics on the causes of such accidents. The use of confidentiality in interviews therefore appears to be an important way to answer to the request of the Commission to determine the real causes of road accidents, independently from legal processes and all the related official records. Ironically, this separation from legal processes could also help to improve criminal prosecutions, by enabling a better understanding of the consequences of the accidents.

INTRODUCTION

The European Integrated Project *Driving under the Influence of Drugs, Alcohol and Medicines* (DRUID) is part of the 6th Framework Programme, which brings together 36 institutes from 18 European countries. The project aim is to gain new insights to the real degree of impairment caused by psychoactive drugs and their actual impact on road safety. This Integrated Project is intended to fill gaps in knowledge and provide a solid base to generate harmonised, EU-wide regulations for driving under the influence of alcohol, drugs and medicine.

The second work package of DRUID is focused on epidemiology. The objectives of this work package is to assess the situation in Europe regarding the prevalence of alcohol and other psychoactive substances in drivers in general traffic and drivers involved in accidents that cause injury, to calculate the accident risk for drug-impaired drivers and to identify characteristics of drug-impaired drivers.

Several methodological approaches are used both for estimating the prevalence of drug driving and the accident risk for drug-impaired drivers, each with different sensitivity and specificity. The prevalence of drug driving is estimated by means of road side surveys and a travel survey and the prevalence of drugs in accidents causing injury is estimated by means of hospital surveys of seriously injured and killed drivers. Accident risk estimates for drug-impaired drivers are based on linkage of test results on drugs in drivers in traffic to drugs in injured drivers, on linkage of medication records to accident data and linkage of analyses of accidents with drug-impaired drivers compared to accidents that do not involve drugs.

In addition, the characteristics of drivers who have been involved in accidents while drug impaired or convicted for drug driving can be investigated by means of interviews. The current study, conducted by SIPSiVi, Italian Society of Psychology for Traffic Safety, is intended to integrate this specific task, by means of confidential interviews with persons intimately involved in serious accidents.

The Commission itself envisaged the need for this kind of studies:

> *There are plans to develop independent road accident investigations along the lines of existing European civil aviation regulations. ... Such investigations, independent from those conducted by the judicial authorities or insurance companies, should be geared to the causes of accidents rather than the question of who is responsible, and should make it possible to improve the current legislation and practices.*
>
> EU Commission white paper “Saving 20.000 lives on our roads” (EC 2003/45)

> *At present, the investigations carried out by judicial authorities or insurance companies are primarily intended to ensure reparation for damage caused by accidents and determine who is responsible under the provisions adopted by the legislator. However, these investigations are no substitute for the growing need in Europe and the United States to have independent technical investigations, the findings of which are targeted at causes of accidents and how to improve the legislation.*
>
> From the Third Road safety action program 2004, EU Commission

The European Union has produced detailed directives on the independent investigation of accidents in three transportation areas: railway, aviation and maritime transportation. For road accidents too, the EU has insisted on similar in-depth investigation, through appropriate methods, so as to be able to have better knowledge of the causes of road accidents.

In 2004, following the EU Commission's White Paper "Saving 20.000 lives on our roads", the Commission created a group of experts with the mission to provide guidance on how to analyse road accidents with the same type of independent investigation already functioning in other modes of transport, named Road Strategy for Accidents in Transport, or RO-SAT WG. The RO-SAT report[1], including review and recommendations, was issued in 2006 in which the existing studies of independent investigation of road accidents were reviewed and analysed. In 2007, different proposals were issued by the Work-Package 4 of the European Project SafetyNet, Building a European Road Safety Observatory[2].

RO-SAT proposed a single and uniform body visiting the scene of major accidents as soon as possible, endowed with powers very similar to those of the other authorities, and simulating as much as possible the methods of the other transport modes. In contrast, after a consultation of experts held on 27 March 2007 in Brussels, the SafetyNet proposal accepted the idea that at least two types of organisations should be created: the first body would be as proposed by RO-SAT, but in addition there should be a second body that would be more appropriate for the investigation of more ordinary accidents. The second body would pay more attention to the privacy concerns of the persons involved in the road accident. Most attendees at that consultation seminar thought that the comparison of road accident investigations with those of other modes of travel is problematic due to the difference in their nature: ordinary road accidents are considered to be 'private', whereas rail accidents, as well as major road accidents, are 'public' and it is more difficult to keep them non-recognizable while publishing an in-depth analysis. Any breach of confidentiality leading to the possibility of identification jeopardizes future confidentiality for the publicly funded body implementing the investigations.

Members of the public are aware that it is not risky to disclose confidential descriptions of crimes to a psychotherapist, as well as to a lawyer, while seeking their professional help. Put simply, these professionals would not exist if they were not able to guarantee absolute confidentiality. In contrast, the highest degree of independence is not yet sufficient to guarantee the same confidence in any publicly funded organisation. Interviews that provide an opportunity to speak about an accident with a psychotherapist, who is able to guarantee confidentiality under their professional code, are a way of obtaining detailed accounts of accidents while avoiding such problems.

Obstacles to confidential disclosure

As the Commission has highlighted, legal concerns are an obstacle to discovering from the responsible driver what really went wrong and what factors were responsible for an accident. After their appointment, aviation, railway and maritime drivers become a part of the administration of their mode of transport and are therefore available to collaborate in order to

[1] Road Accident Investigation in the European Union, Review and Recommendations, Expert Group on Accidents in Transport Sector, Report from the Road Sector Working Group to the Plenary, 11 May 2006.

[2] Elliman R. et al. Proposing a Framework for Pan-European Transparent and Independent Road Accident Investigation, published by the Association for European Transport and contributors, 2007.

understand the roots of their mistakes. They are much more available for investigation compared to drivers on the road who remain independent and reluctant to confide in anyone for fear of prosecution. Driving under the influence of impairing substances (such as drugs and alcohol) is a serious crime in any country. For instance in Italy the punishment of this crime, when there are severe consequences in an accident, can result in up to 15 years in jail, plus: the withdrawal of the means of transport; the withdrawal of the licence; a heavy fine; financial compensation to victims.

An important attempt to overcome the reluctance to disclose the real causes of the road accident, especially when a crime has been committed, was conducted within the EU Project *Impaired Motorists: Methods Of Road-side Testing and Assessment for Licensing* (IMMORTAL). This project produced valuable meta-analyses of previous studies conducted without the cooperation of the guilty driver, but the researchers found difficulties in getting in contact with some of the accident involved drivers (Bernhoft, , 2005). When this goal of the researcher was explicit, as for instance in an interview, some drivers could not be contacted and a few drivers refused to answer when contacted. The largest number of similar confidential interviews has been obtained by the Danish partner, where, out of 333 patients treated in hospital after a road accident, 52 patients were addressed either because of drugs found in a saliva or blood sample or because of self report of drug use. In this study "*33 interviews were carried out with drivers treated in hospital after a road accident, who were either confirmed positive for drugs or had self-reported drug use. However, only 23 of these could be included in the analysis. The remaining 10 interviews revealed that the reported drug use was not assumed to impair the driving, the drugs were given after the accident took place, or the patient was not sure whether he had been the driver"*.

As mentioned earlier, a wider analysis of the problem was conducted by the EU project "SafetyNet, Building a European Road Safety Observatory" that described many examples of in-depth analyses surveyed in different countries. One of the most complete methods appeared to be the VALT system in Finland, whose results are also described in the DRUID Deliverable D 2.3.3 (Laapotti & Keskinen, 2010): officially, the data collection by the researchers of VALT is separated from the data collection by the police; however, a police officer is also a member of the VALT team, and the report itself declares at page 38 that, "*even though the investigation aims to be separated from the judicial system, it is difficult to keep that separation until the end of a trial, especially when DUI is found by the team as a cause of the accident*". This makes the involved persons suspicious enough to prevent them from disclosing descriptions which could damage themselves, their relatives or friends in the judicial procedure. In addition, the VALT system is funded and managed by the insurance companies, who are allowed (and interested) in avoiding reimbursement of damages to guilty drivers, creating a conflict of interest in the research manager (who is aiming to get a confidential description for the sake of science and better accident prevention). That system is similar to many other in-depth analyses based on objective data collection, but does not include confidential descriptions from the involved persons, especially from those who are guilty of a crime. In an attempt to remove this distortion, Finland was the only country supporting Italy against the EU Commission during the trial at the European Court of Justice discussed later.

Converging approaches in DRUID

Within the DRUID project *"an integration methodology in order to combine the results from different study types realized in WP1 and WP2"* is envisaged (D 1.1.1. Theoretical Framework For Substance Effects on safe Driving). The authors (Krueger, & Hargutt, 2008) show the different ways by which several types of studies struggle to cover some specific

issues, e.g. case control studies should try to know how many are DUI, and how many drivers are really sober while having their accidents, and the difficulties to create representative samples; the culpability studies should try to know if the formally non-culpable participant in an accident is really exempt from any contributory behaviour, especially when driving under an allowed or non-detected quantity of impairing substance; the relative-risk studies have difficulties in correctly balancing the incidence exposed with the incidence not exposed. All these approaches would profit from a confidential collaboration of persons involved in the accident, finally including the description of their own misbehaviour, without any resistance to disclosing their answers. In particular, as the above mentioned "Theoretical Framework" notes at page 18, "*most studies neglect the cases when no counterpart is involved"*. But many accidents are caused by drivers who simply lose control of their car and have an accident involving their single vehicle (e.g. leaving the road, hitting obstacles etc.) due to the effect of alcohol and other substances, so distorting samples that are based on the essential interest of the legal system to attribute damages to one of two crashing drivers. This interest is the main motivation to the data collection in the field, as noted by the Commission in its above mentioned Paper issued in 2003, and in its Program launched in 2004. Only guaranteed confidentiality for drivers can allow researchers to address the omissions of single vehicle accidents in our knowledge. Such confidentiality also allows information to be obtained about substance consumption and driving, as well as information on driving style and the main cause of the accident. But how is it possible to get this confidential account given the opposing interests of guilty drivers?

A possible solution

An answer to this question can be proposed by a discipline called "Disaster and crises psychology". This discipline teaches us that there is a healthy need for persons involved in serious accidents to describe any single detail of that traumatic experience in a confidential situation to prevent or reduce Post-Traumatic Stress Disorder (PTSD). The provider of this truthful account is not simply available, but *needs* to confess the reasons for the accident, in order to alleviate and overcome their sense of culpability. As an added bonus, the person confessing can easily add the description of any other interesting characteristic: lifestyle, driving style, perception of public service campaigns, effects of enforcement on inappropriate behaviour etc. Indeed, there is a great deal of information available that may be revealed. But the most valuable result of this work is to provide a truthful description of the accident and its shared responsibilities, as indicated by the above mentioned Commission's requests. This includes a subjective description of the personal level of impairment of the driver, which can only be determined in a confidential environment. This kind of independent investigation may therefore become a crucial tool for the construction of the new European Road Safety Observatory (ERSO), constructed on the basis of the previous experiences of independent investigation from Germany (GIDAS), Finland (VALT), UK (OTS), France (BEATT) etc.

During the previously mentioned SafetyNet seminar in Brussels, a psychologist from the VALT system noted our duty to remember that even the guilty driver is a victim, needing ethical protection: this was the starting point in the study presented here. The focus on the health of the participant protects the investigation from any requests for information from the legal system: this is a general principle, though differently applied in each country. Namely, the Italian criminal code (article 365 of the Italian criminal code) explicitly exempts health personnel, during assistance to patients, from the obligation of reporting such crimes. Indeed, there have been no successful attempts to coerce psychologists (who are all categorised as health personnel in Italy) to supply such information obtained during psychological treatment. In fact, in contrast to medical treatments, psychological treatment itself consists in acquiring this knowledge; it is impossible to mix psychological support with a duty to report it to the

judiciary. Therefore, threatening the confidentiality of psychological work would be directly against the basic rights of any citizen to healthcare, as protected also by the Italian Constitution. For these reasons, the solution proposed by this study – confidential psychological interviews – may become a standard practice in the future, not only in Italy.

Confidentiality is not only a basic tool for psychological work; it is also the first of the "Eight common values" - eight ethical principles transversal to any profession - approved by the European Council of the Liberal Professions (CEPLIS) on 20 June 2007. The EU Commission acknowledged the eight common values as a basis for the harmonisation of all the codes produced by professional bodies along the EU member States, as foreseen by the Inter-institutional Agreement "Better Law making" approved by the Parliament, the Council and the Commission in December 2003.

Post-Traumatic Stress Disorder (PTSD)

The literature on PTSD and its treatment is rather new, but has been expanding in recent years, led mainly by practitioners rather than from purely academic research. In fact, such diagnoses and treatments have been mainly driven by two professional groups of interests: of lawyers and of professional associations of psychologists.

The lawyers acting in legal procedures prefer to require the coverage of damages resulting from physical evidence; the symptoms linked to PTSD (intrusive memories, amnesias, fear, flashbacks, nightmares, feelings of distress etc.) are harder to objectively diagnose; it is much easier for the victim to show the cost of the psychologist treating those symptoms, and then claim as an appropriate compensation a multiplier of them. Until the 9/11 event, this multiplier was up to five or six times the incurred expense. The increase in requests since 2001 has led to a reduction so the current multiplier is now only double the cost. However, car accidents became a leading field for this professional activity and the related literature.

In contrast, the professional associations of psychologists, both in USA and in Europe, have been engaged in supporting this new discipline by ensuring the discipline neither understates nor overstates what it can achieve. The American Psychological Association (APA) published *"After the Crash: Assessment and Treatment of Motor Vehicle Accident Survivors"* (Blanchard and Hickling, 2010), aiming to restrict the use of the syndrome and appropriate treatments to relevant situations. The European Federation of Psychologists' Associations (EFPA) collaborated with the Council of Europe (CoE) - competent in humanitarian issues - in order to establish criteria for this kind of intervention, through its Standing Committee on Disasters and Crises (see http://disaster.efpa.eu/). After this collaboration with the CoE, EFPA obtained funding from the European Commission for a review of treatments of PTSD, e.g. those implemented following six wars between the twelve ethnic groups of the former Yugoslavia (Zotovic and Stanulovic, 2002). Stanulovic's technique involves recalling the details of the traumatic event and has been implemented in the current research.

Using such confidential interviews, we are able to get reliable information and hence an in-depth analysis of the characteristics of those drivers who were actively involved in causing any kind of notable road accidents. In addition, we can offer help from psychologists, who are able not only to reduce PTSD, but also to describe the impairment induced by any kind of substances on the involved driver compared with other types of impairment and with other causes of accidents. However, in order to better guarantee confidentiality, this study does not attempt to estimate the degree of responsibility for the accident that should be attached to the driver who is the focus of the examination.

Within the DRUID project, the WP2 Epidemiology adopted different approaches, depending on the willingness to collaborate of the participant. Refusals can distort the results even though DRUID researchers always took note of these refusals, recording any relevant data. However, the gap remains, though with some information about the broad outlines. Not only can direct refusals affect the results, but there is also a problem that the data can be distorted by the lack of knowledge of other possible factors that were not included in the analysis. For example, it is often impossible to know if other additional substances were impairing the driver, if the driver does not disclose information about the substances they have consumed. No laboratory can be quick enough to adapt the set of analyses to the speed of drug dealers in changing the drugs on offer on the illegal market. Even small amounts of new illegal drugs, especially if mixed with the allowed level of alcohol, plus some allowed psychotropic medicines, can produce very dangerous impairments without being detected. The collaboration of the drivers of interest remains crucial, even in countries more advanced than Italy in the detection and suppression of driving while under the influence of illegal drugs.

Principal aim of the study

The general aim of this study is to get a complete and accurate description of the characteristics of the drivers who caused accidents, including DUI and other causes, by the driver, a witness or a person very close to that driver. As noted above, Disaster and Crises Psychology assures a strong motivation for the informed participant to collaborate fully and sincerely. As a result of this conjunction of health and research goals, it is possible to get the desired description of the single accident and of its causes, even when including details of driver faults and crimes.

Potential interferences with the selection of cases

Why has this tool, though it is able to satisfy the principal aims, not been used before? The main problem, deserving further consideration from the methodological point of view, is the passive, though neutral, selection of cases for the construction of the sample.

Other types of research, though depending on the willingness of the involved persons, can actively select cases using statistical rules, scientifically defined in respect of the population to be studied. The distortion comes later, not in the design and construction of the sample, due to problems in determining accurate information. On the contrary, the approach proposed here depends on a request *from* the responsible driver, or a person deeply linked to that driver, a request to be helped to alleviate their (self-diagnosed) PTSD. This request is the best basis for a truthful description of an accident's causes, but so far only seldom exploited by researchers.

We must also note that the need to disclose every detail in a confidential frame for healing reasons is initially painful: only later does it become a relief, and not always so. Anyhow, the burden is initially intolerable, causing the suffering person to not only hiding the facts to external persons, but even to their own conscience. In addition, there are quite different styles to manage this initial pain of being conscious of the disaster. In Italian (and other Western) culture, females are more able to remain aware, even if this causes them to cry. In contrast, it seems to be a sort of duty of males to repress emotional pain, even if this brings them to forget the most painful details. However, when they are in a confidential situation with a psychologist, males seem more able to describe the disaster; unfortunately, this brings to our interviewers more unaware males than aware females.

The fact that eventually it is a relief to have been able to speak about an incident is a psychological mechanism rather well known, not only by psychologists, but also by the general population. Such widespread knowledge generates the request of psychological help

in various other circumstances, but not so frequently after a road accident, for the reasons recalled by the EU Commission in its *Third Road safety action program* (2004), quoted earlier. The lack of such requests for psychological help after a road accident makes it difficult to plan and shape a sample of interviewees and of analysed drivers. Therefore, a further important aim of this intervention must also be to make this practice more accepted by the general population of drivers involved in accidents, or of persons well informed about them, and also to facilitate similar studies, until the establishment of an appropriate systematic and continuous procedure.

In recent years, within the framework of road education in schools, many traffic psychologists have noted an increasing demand to support the classroom in case a student has been somehow (even indirectly) confronted with the consequences of a road accident. This is a promising trend for a future openness towards a more generalised ability to share knowledge about the causes of road accidents. A wider flow of information would of course improve not only sample construction, but also the scientific value of the future results of research.

Limits of research using confidential interviews

There have been some attempts to use this kind of confidential interview of drivers involved in accidents for the scope of pure research (without the health purposes) regarding the causes of those accidents. An attempt to discover the causes of various kinds of accidents, including road accidents, was conducted by the faculty of Psychology of the University of Rome (Carbone, 2009). The psychologists approached some injured persons recovering in hospitals, by means of a method that proposed a sort of psychoanalytic treatment - to freely associate any new thoughts to the accident. As always in psychoanalytic treatment, a lot of symbolic meanings were given to each accident, somehow appearing as causes of it. The typical mechanism appearing in these studies is the inversion between cause and effect: the obtained effect, even if painful, appeared to be the origin of the wrong behaviour (considered as a lapsus) and of the accident itself. This study produced a number of publications (see again Carbone, 2009) and was also able to open a continuous point of contact with hospitalised youngsters. Though the focus of that initiative was not specifically centred on road accidents, this precedent has been important for the current study, as it demonstrated the possibility to link confidential interviews, in a health frame, with the goals of research.

The combination of the health goal with research in traffic psychology is rather new. Apart from research, psychologists have been involved in traffic safety in two main sectors: driver selection and driver improvement. Though the cautious selection of drivers can prevent injuries or fatalities, and driver improvement can also play a role in health prevention (e.g. prevent drivers from conditions caused by their lifestyle such as excessive drinking), psychologists working in driver selection and improvement are not included in health services. Instead, they are separated from those taking care of injured and otherwise suffering persons. This derives mainly from the ethical codes of psychologists, requiring a clear definition of the recipient of the service, especially when there is a conflict between society and the individual. This distinction has resulted in some psychologists defending society by excluding some drivers from driving while other psychologists help addicted persons to overcome their addiction. But in the field of road safety, as well as in the three other fields of transport mentioned by the Commission, there are areas where the interests of society and of the individual do not conflict with each other. This is the area explored by the current research.

Limits of confidentiality in other road accidents prevention methods

Research is not the only way to use confidentiality for the prevention of road accidents. The EU project "CLOSE-TO" has been able to use confidential disclosure from the driver of what went wrong in the accident to assist learners in driving schools, in a specific kind of peer-education. These preliminary studies have demonstrated that guilty drivers who accept the opportunity to describe their misbehaviour can be very effective as peer-mentors. The learners recognise the road risks more easily if they are described by a person who is suffering from their consequences, such as being in jail or paying some other heavy debt to the judicial system. The results of "CLOSE-TO" were recently disseminated, but the suggested practice is not easy to be implemented until the legal system effectively encourages drivers to publicly deny any responsibility under the criminal procedure and, for a longer time, under the civil procedure. This situation prevents the guilty drivers from conceding their crimes to an open audience. Only confidentiality guaranteed by professional secrecy allows drivers to disclose their crimes.

Apart from these distinctions, it must also be considered that the recipient of a single psychological service has a global perception of the providers of all psychological services. They are not indifferent to other interventions of psychologists - at least of those operating within the same country. It is important to keep in mind the characteristics of other psychological interventions in the same field, in order to accommodate the new kind of intervention to make it acceptable to the general public of that country. As the extent of selection of good drivers increases in a country, and the degree of enforcement becomes higher, and the national psychologists are more involved in that enforcement, it also becomes more difficult for those psychologists to get the confidence of criminal drivers. The difficulties found by Danish researchers to get a wide number of confidential interviews during IMMORTAL (Bernhoft, 2005) seem to be even greater during DRUID in Sweden (Forward, 2009), where they also tried to get confidential interviews from patients of a centre for addiction, and in Germany (Walter & Hargutt, 2011), where 300 addicted drivers were monitored by a Blackberry contact for years: no one of them admitted to have caused an accident while DUI. On the contrary, acceptance of participation in confidential interviews in Italy for the current research has been very high even by criminal drivers. Perhaps the tradition of the Catholic confession that does not imply a punishment, but on the contrary provides absolution, may account for the willingness to participate. Probably, something much more concrete can explain the readiness of guilty drivers in Italy to admit to criminal behaviour in a confidential setting, as we can see in the next chapter.

Peculiar opportunities of Italian drivers to satisfy the EU Commission's requests.

Italy has a particular situation in facilitating the smooth introduction of this kind of mixed intervention that combines health promotion and research because of the neutrality of the national organisations that are usually most aggressive and most effective against guilty drivers. All other EU countries have a group of more directly interested organisations, privately funded, but able to actively represent the general interest of all the society against road accidents: the insurance companies. Each insurance company should have a direct interest that conflicts with the driver causing an accident. If an insurance company reduces the number of accidents caused by its insured drivers, this company may reduce its fees, thus attracting more clients, and winning market share from the other companies. For this reason, each insurance company prosecutes severely its own clients' faults, considering their crimes as a sufficient reason to claim back the money they had to pay to the victims. Insurance companies may even pay some professionals, usually psychologists, in order to improve their clients. Those drivers who are reluctant to change their attitude to driving after drinking or

taking drugs are threatened by their insurance company with losing their insurance cover, thus losing also the right to drive. Psychologists working in this way are clearly not suitable to offer confidential support to drivers having caused accidents.

However, Italy is a complete exception to this approach. By article 11 of the law n. 990 approved 24 December 1969, this is the only country in Europe to have forced any insurance company to accept *any* driver, even those who are definitely reluctant to improve their behaviour. Moreover, on the basis of the same article, this country punishes those insurance companies who raise their fees to a level that discourages drivers to pay. Finally, it authorises any bad driver to adopt the insurance of a more virtuous relative or co-habiting person. This law absolves any driver from any financial responsibility for their behaviour. In addition, looking at the insurance companies, the same law forces them to adapt their fees to the losses of the previous five years, plus 30%. In practice, it is in the interest of any company to have the worst drivers, including fraudulent ones, in order to raise the whole volume of its affairs and the related percentage of earnings. Thus the Italian driver does not receive any incentive to improve their driving from their insurance company. Even the campaigns launched by ANIA, the federation of Italian insurance companies (amounting to a cost of some tens of millions of Euro since the mentioned law) are vague ("drive cautiously") and totally avoid any bad habits of drivers, as well as any enforcement (differently from the suggestions of the EU project CAST - Campaigns and Awareness-raising Strategies in Traffic Safety). Of course, the Italian insurance companies avoid not only selection, but also improvement of their drivers, and thus never use psychologists for this activity. The EU Commission has criticised this Italian law that forces any insurance company to accept any kind of bad driver as he had a "right to drive", argued the Commission's lawyer Jàn Mazàk in front of the European Supreme Court of Justice. Leaving apart any other comment on this law, it is clear that it makes Italy the most tolerant country for the guilty driver, but therefore making it the best one for obtaining confidential descriptions of such road accidents.

Special opportunity for Italian psychologists to satisfy the EU Commission's requests. Thanks to this questionable legislation and the converging gaps in Italian enforcement, this study can also address the aim of correctly locating this research in the wider context of the psychological interventions in traffic safety, not always welcomed by the drivers.

The interest of psychologists can be perceived by the drivers as conflicting. Driving is the most frequent opportunity to commit crimes. Therefore, in those countries where the psychologist is perceived as an ally of the authority that excludes drivers from driving, the image of the psychologist does not appear friendly. It is important to have a complete framework of the positions of this professional in the different roles, in order to allocate this final intervention in the position most suitable to be accepted by the guilty driver. This is the position at the right-hand lower quadrant of Figure 1.

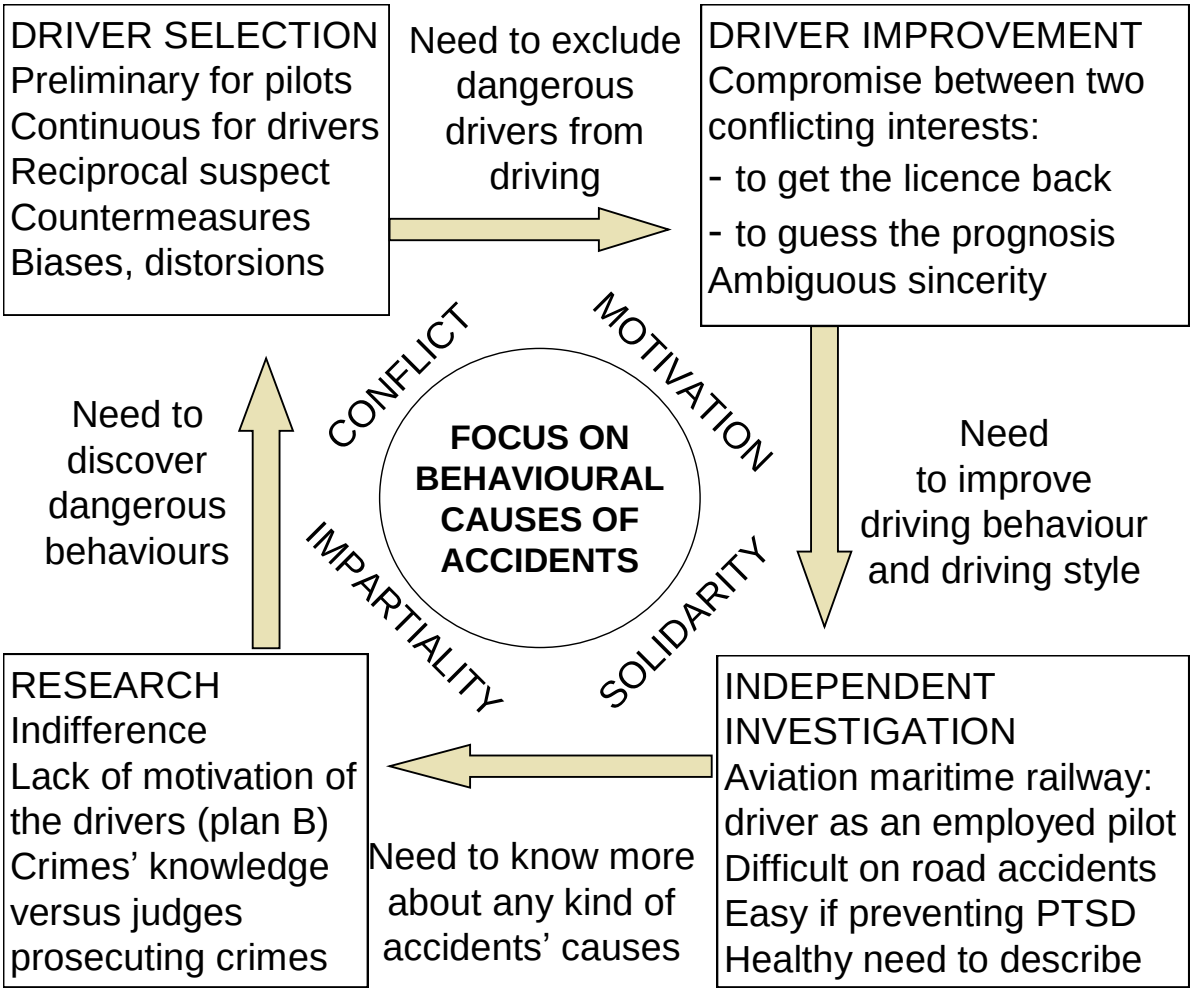

Figure 1. Psychological roles in behavioural causes of accidents.

As the arrow shows, a targeted implementation of this quadrant would immediately facilitate the quadrant of research, and improve the whole virtuous circle between the four quadrants, so far blocked (as lamented by the EU Commission) by the lack of a really independent investigation on the behavioural causes of road accidents.

As has been explained earlier, these issues may be repressed during research because of the risk of legal consequences, loss of insurance coverage etc. But the need to discuss these issues exists in any person who has been involved in a severe crash, directly or even indirectly, not only as an actor, but also as a relative, a friend, a witness, a rescuer, a caregiver - a person who was very familiar with the accident. These incidents always run the risk of causing a crisis and Disaster and Crises Psychology has demonstrated that the need to describe every single detail is healthy in all these cases to prevent or alleviate PTSD. The first goal of these psychologists can be envisaged within the health frame. Consequently, they are protected by health legislation against the risk of being forced to disclose in a trial the information collected in these confidential interviews. The psychologist who explains this protection, in a proper way, can thus obtain a reliable description of all the relevant features of the accident. Indeed, after this explanation has been made and understood by interviewees, an impressively abundant flow of information has been obtained by the psychologists in our study.

Understanding the psychological factors

Berghaus, Ramaekers and Drummer (2007) recently observed that *"Since human performance is a key factor in crash causation, detailed knowledge of the involvement of alcohol, drugs and diseases is of fundamental interest for road safety. To better understand the effect of these influencing factors it is important to use a combination of witness observations and a range of experimental and epidemiological studies".* Of these three approaches to data collection, Berghaus and colleagues recognise the value of witness observations to determining the circumstances and factors underlying the accident: *"The principal methodological approaches to determine the influence of risk factors such as the effects of alcohol, drugs, fatigue etc. on driving safety are summarized as:*

(a) the circumstances of the case,
(b) understanding the psychological, pharmacological and medical factors,
(c) experimental studies and
(d) epidemiological studies."

However, the first two items are all too often omitted when deciding on the methodology and design of studies investigating road accidents.

Both RO-SAT WG and Safety-Net WP4 (devoted to Independent Accident Investigation) agreed on the need to guarantee the "liberty to investigate, access to evidence and witnesses". However, the more we get from evidence, the less we get from confidential witnesses. Sigmund Freud, the founder of the psychoanalytic method - a good source of confidential information, argued that in order to get the maximum width and depth of information from a witness, the professional must reject any other source: relatives, friends, other professionals, and also evidence of any other kind. We did not acknowledge this argument in organising the study design. Originally we allowed the option for the psychologists to get information from other sources, but ultimately nearly none of them used this option, most likely so as not to jeopardize confidentiality.

Only confidential description can overcome these distortions, facilitating the healthy need to tell the truth about the incident, studied extensively on compulsory descriptions, but actually misunderstood because of the lack of information provided confidentially.

Other aims of the study

In addition to the principal aim described above, other aims of the study were to:

- make a preliminary investigation of the differences and similarities between the information provided by the Police that becomes official statistics and the results deriving from confidential interviews
- describe in more detail the distribution of the sample as produced by the previously described preliminary restrictions and conditioning aims
- analyse the information derived from confidential interviews on the characteristics of drivers who caused the accidents; in particular, to produce a comparison between their life-style, their driving-style and their direct causation of the accident, as a means to evaluate the efficiency and efficacy of government policies
- explore hypotheses to understand the reasons for differences and similarities between other sources and confidential knowledge, in order to draw indications for further research; in the case of differences and similarities, to produce some first guidance in order to improve traffic safety.

METHOD

Interviewees

The interviews involved 176 interviewees – 113 males and 64 females – who described 241 separate road accidents in which they had been involved either as a driver, passenger or as a witness. Interviewees were recruited primarily through various associations for victims of traffic accidents; the interviewers attended some of these meetings, but there were no formal links with the associations. Indeed, for reasons of confidentiality, the associations explicitly refused to provide lists of their members. Participants were also recruited by snowball sampling with interviewees asked to prompt any of their friends who felt a need for psychological help as a consequence of their involvement in a road accident to volunteer for participation. In addition, the interviewers were asked to use their existing channels that they used to recruit clients to find suitable interviewees.

Interviewees were included in the study if they felt traumatised (i.e. self-diagnosed as having PTSD) as a result of at least one road accident in which they had been involved either as a driver, passenger or as a witness. Interviewees were excluded if the interviewer (a qualified psychologist) concluded that they were not sincere due to contradictions in their account or in the light of the interviewer's clinical experience. Additionally, interviewees were excluded if they did not require counselling, but were simply curious about having an interview with a psychologist.

Interviewers

The interviewers were psychologists and psychotherapists who were members of the Italian Society of Psychology for Traffic Safety (SIPSiVi). They were selected on the basis of their previous experience not only in Traffic Psychology (typical of a member of SIPSiVi), but also in Disaster and Crises Psychology. Of the 200 suitable members of SIPSiVi, twenty-two were formally approached given their expertise in questionnaires and/or interviews and two of these declined. In addition, the potential interviewers were asked to supply three to four pilot interviews and, based on these, fourteen interviewers were selected (seven male and seven female) to participate in the study.

Procedure

Interviews took place from February 2007 until April 2009. Accidents from all the five Regions of Italy (North-West, North-East, Centre, South, Islands) described by the EU NUTS1 classification were initially included in the interviews, but the accepted interviews came mainly from the two Northern Regions. Accidents from the Southern region were completely excluded as not comparable to the European standards, mainly because of problems with fraudulent accident reporting in that region, as denounced also by the Supreme Court about the Italian insurance legislation (Case C-518/06, judged 28 April 2009).

The location of the interviews was agreed between the interviewee and the interviewer as a compromise between the health needs of the former and the usual procedure of the latter. The location was typically either the home of the interviewee or the office of the interviewer. Pilot work suggested that the most fruitful interviews appeared to have been obtained by psychotherapists using psychoanalytic methodology. Therefore, it was suggested that interviewers allow interviewees to take the initiative by giving a detailed narrative of the accident, with detailed questions postponed until later in the interview. For someone who has suffered some kind of trauma subsequent to a road accident, it is not appropriate to use a rigid questionnaire in order to collect data. Instead, the person being interviewed should feel more in control throughout the interview situation, including being able to interrupt, or even

terminate, the interview at any point. There was no time limit for the interviews but they typically lasted between 45 and 75 minutes.

All interviewers were supplied with detailed written instructions on the conduct of the interview that had been developed during the pilot phase in the light of feedback from the interviewers and the interviewee reports (see Appendix 1). In addition, forms for informed consent were provided for interviewees to sign. The interviewers produced a report of each interview in the same manner that they would normally use in their clinical practice, but with attention to the issues highlighted by the study coordinators. The interviewers ensured that the interviewees were not identifiable. Interviewers agreed *not* to accept the interviewee as a patient subsequent to the interview.

Coding

Interviewers were paid according to the number of described accidents and the completeness of their description, but not according to the type of accident reported, i.e. there was no preference for accidents caused by driving under the influence. Instead, interviewers were paid according to the *quality* of the interviews to encourage them to obtain as much relevant information as possible (to a maximum of €150 per described accident) under three broad headings: minimal, but acceptable; satisfactory, but incomplete; complete, or nearly complete. A standard procedure was followed to minimize distortions when coding the interviews. When the interviews were received and deemed to be acceptable, each interview was coded by at least two psychologists. If the psychologists agreed on the coding, the coded interview was included in the database. Where there were disagreements, the psychologists reviewed the disagreements so they could agree on the final coding. If they noted problems due to any ambiguity in the instructions to the interviewers, clarification was issued in the periodic updates issued to interviewers (finally resulting in the text attached as Appendix 1).

Each interview might describe more than one accident. However, the spreadsheet was created with each *accident* described in an interview. Each accident was treated as a separate case. The gender and age of the driver responsible for the accident was determined. The driver's **lifestyle** at the time of the accident was determined, including their use of drugs, medication and alcohol as well as their usage of different transportation types, their most preferred mode of transportation and the stability of their transport choices. **Driving style** was defined as the drivers' use of drugs, medicines, alcohol at the time of their accident and whether the driver had combined any of these. The driving style at the time of the accident was noted in the interview. Inappropriate behaviours for driving, the number of accidents and whether such behaviour had endured for over a year were noted. The characteristics of the accident were coded including the day of the week, time of day, type of road, vehicle type and nature of the journey. The driver's attribution to the **accident causation** was noted along with that of the police, insurance company and the health system. Possible categories included: drugs, medicines, alcohol, the combination of alcohol and other substances, risk seeking (e.g. excessive speed), other impairing physical conditions, other incorrect behaviour, weather conditions, infrastructure, vehicle type and withdrawal of enforcement.

Interviewees were asked to recall **road safety campaigns** that were addressed to drivers and to suggest subjects for such campaigns and these were coded into the following categories: drugs, medicines, alcohol, combination of alcohol and other substances, risk seeking (e.g. excessive speed), wearing restraint and protection systems, other physical conditions that impair driving, other incorrect behaviour, weather conditions (fog, rain, snow, ice and wind), infrastructure, vehicle type.

Interviewees were asked to recall **campaigns** for changes to prevent road accidents addressed to the authorities/administrations responsible for traffic safety, and to suggest appropriate campaigns, and these were coded under the following headings: infrastructure, unclear road layout, poor signalling, bureaucratic procedures, accident registration, and communications between relevant organizations.

Similarly, interviewees were asked to recall **campaigns** to prevent road accidents that were addressed to the police and judicial authorities, and to suggest appropriate campaigns and these were coded under the following headings: enforcement effectiveness, controls relating to quantity and quality, bureaucratic procedures, accident registration, communications between relevant organizations.

Finally, measures that would be suitable to **rehabilitate** the driver who caused the accident were identified including: driver school, driver improvement (i.e. drink-and-drive, other DUI and for risk seekers) and reparative justice (assistance to victims). In the present study, only analyses on the most relevant issues have been reported here.

RESULTS

Although the interviews were not recorded and transcribed, the skill of the psychologists who carried out the interviews meant that the reports they produced had a great amount of detail, revealing both factual information and giving an insight into the consequences of an accident. Though very detailed, these descriptions are far from being complete. The two examples reported below give an insight into consequences of an accident, including two detailed descriptions of Post Traumatic Stress Disorder where the amnesia is nearly total. In all the other cases such memory loss is more limited. (Note that all the examples that follow have been translated and summarised from the original Italian report, much wider)

> *While coming back from a disco I was drunk, probably over the alcohol limit, but the other car coming from a side street did not stop as required. He was speeding terribly and, passing over a small hump, collided with me after a jump, a sort of take-off. I don't remember anything afterwards, not even during the hospitalization. The things they say to me about that period make me feel like it was another person. They told me that the ambulance found me in a foetal position, and that it was hard to look at me for a long time, even for my mother who also remains traumatised. As a matter of fact, I changed dramatically. I remained in a coma for one day, and in pharmacologically-induced coma for some days more. When awake, I writhed all the time, smearing shit on my face, harassing nurses, demanding to be free; they called the Police and they even had to restrain me by tying me. Since then I hardly sleep; I do not have any sexual intercourse. Also my social relationships have been enormously reduced. I wonder if I am still myself, as if my past self is not me anymore. Obviously the other driver got the blame for the accident, and I will probably receive a lot of money, but I do not care anymore. I feel tired, depressed, lonely, less energetic, without enjoying my life. I have to control everything otherwise I become terribly anxious. I would always talk with anybody, but at the same time I think nobody could understand what I feel. I go to bed at half past nine in the evening because I feel tired, but also because I fear to meet others, feeling inadequate and afraid to be perceived as such. The only things I like are the garden and keeping my house in order, but these remaining pleasures separate me even more from other people. I still have some physical disorders, therefore I avoid driving, especially when it's dark. I wonder how could I meet a woman. I feel slower and, even if I started work again, I feel less efficient. What is incredible is the nature of the amnesia. In contrast to some forgotten memories,, I remember in an unusually detailed and intense way the following period of physiotherapy, each and every movement of mine and of the others taking care of me. Those moments have been somehow beautiful, but did not take away the suffering I cannot get rid of, though it has been changing as the months pass.*

While the driver described above, despite his drunk driving, has strong reasons to believe that the other driver is entirely responsible for the accident, the following interviewee tries to feel innocent, but is much less successful.

> *The accident happened in August 2000 - culprit a swarm of bees entered through the open window. Also the tree into which we crashed is to be blamed - they should cut them when so near the road; this is unacceptable*

in a civil country. If that tree had been cut, my son would be alive, and my leg still working properly. My husband is not to be blamed; he drove without exceeding the speed limits, but has got 40 stings even under his shorts, and completely lost control of the wheel. He and our elder son behind me did not report any harm, while my child died in my arms. (The interviewer tries to understand the dynamic) *It is too painful to deal with these matters, if you pose questions of this kind I can't stand it, and will stop this meeting*. (The husband leaves, suffering too much, but his wife decides to continue, being reassured about the questions*). In fact, I do not remember what really happened, because I suffered a cranial trauma. Not only for the accident, I have a black hole for a number of months even before the accidents, and was in a coma for three months after the accident. Of the persons visiting me in the hospital I recognized only a few. I am still disabled in walking and moving my arm, rotating my neck, every movement still painful, even after that long rehabilitation. We were two entrepreneurs, a lot of work but satisfying, now we are pensioners living so badly.* (The interviewer asks about how the mother knew of the child's death. The mother cries.) *They told me only one year later; it has been terrible. Previously, I wondered why only our elder son came to visit me, but finally my husband decided to tell me. The hospital provided psychologists for my husband in order to prevent him from committing suicide, but not about how to speak with me about the child's death - perhaps it was not easy even for them. At home we never speak of the accident. It happened in a particularly happy period, lucky, we were moving to a better house just in that trip. Never say that things are going well, see what it happens.* (The interviewer questions about typical symptoms of PTSD) *No, none: no intrusive memories, no avoidance of persons or places, no dreams, absolutely none. In contrast, my husband has a lot of them, very bad; he also takes medicines for that. Instead, my only problems are physical, that I cannot move well, not even to embroider with my arm, so I mainly watch TV.*

The omission of the use of a child restraint system and of one of the seat belts has never been mentioned in the interview, not even by the interviewer. The reasons for missing even such essential data can vary, but sometimes it is not possible to overcome these limits within an interview.

General description of the sample

The sample presented in this report is composed of a total of 241 accidents reported in the interviews. There were 80 female and 161 male drivers described in the sample. Examination of the age groups in Table 1 reveals the most common ages in our sample as being 19 - 25 and 26 - 35 years of age.

Table 1. Age of sample members (N = 241).

Age group	*Number*	*Percentage*
< 18	16	7
19 - 25	70	29
26 -35	96	40
36 - 47	42	17
48 - 59	10	4
60 +	7	3

The persons interviewed by psychologists were involved in the accident in a variety of different roles (Table 2). The role is considered as active when the interviewees were driving and also caused the accident; the role is passive when for example the interviewee is a passenger who knows the driver well and is aware of the driver's role in the accident; their role is also deemed passive (towards accident causation) when they provided assistance at an accident. In our sample more than 60% of our interviewees were the driver who caused the accident, or they were involved as passengers (16%) or as a driver in another car, but not at all responsible for the accident (15%). In all cases, the interviewees were emotionally involved in the accident.

Table 2. Interviewee role in accident (n = 239, 2 unknown, of 241)

Interviewee Role	*Number*	*Percentage*
Driver responsible for accident	148	62
Driver passively involved	35	15
Vehicle passenger	37	16
Witness	5	2
Pedestrian, helper and other	14	6

Most of the road accidents occurred in the afternoon and the early hours of the morning (Table 3). The grouping of the hours of the day uses the commonly used description of traffic flows in Italy, which is also used in order to group the frequencies of accidents in the same periods to allow comparison with the official statistics from the Italian Automobile Club (ACI).

Table 3. Frequency of accidents by the time of the day (n = 229, 12 unknown, of 241).

Time Period	*Number*
08:00 – 13:59	33
14:00 – 19:59	74
20:00 – 00:59	53
01:00 – 07:59	69

Weekends are the most dangerous periods for road traffic accidents according to the official statistics, where we note a slight inversion between Saturday and Sunday if we compare them with our sample (Figure 2). However, in the official statistics (early) morning Monday is included in the weekend figures and could account for this difference. The clear prevalence of accidents during the Saturday and Sunday nights is related to the preponderance of leisure trips during this period of the week.

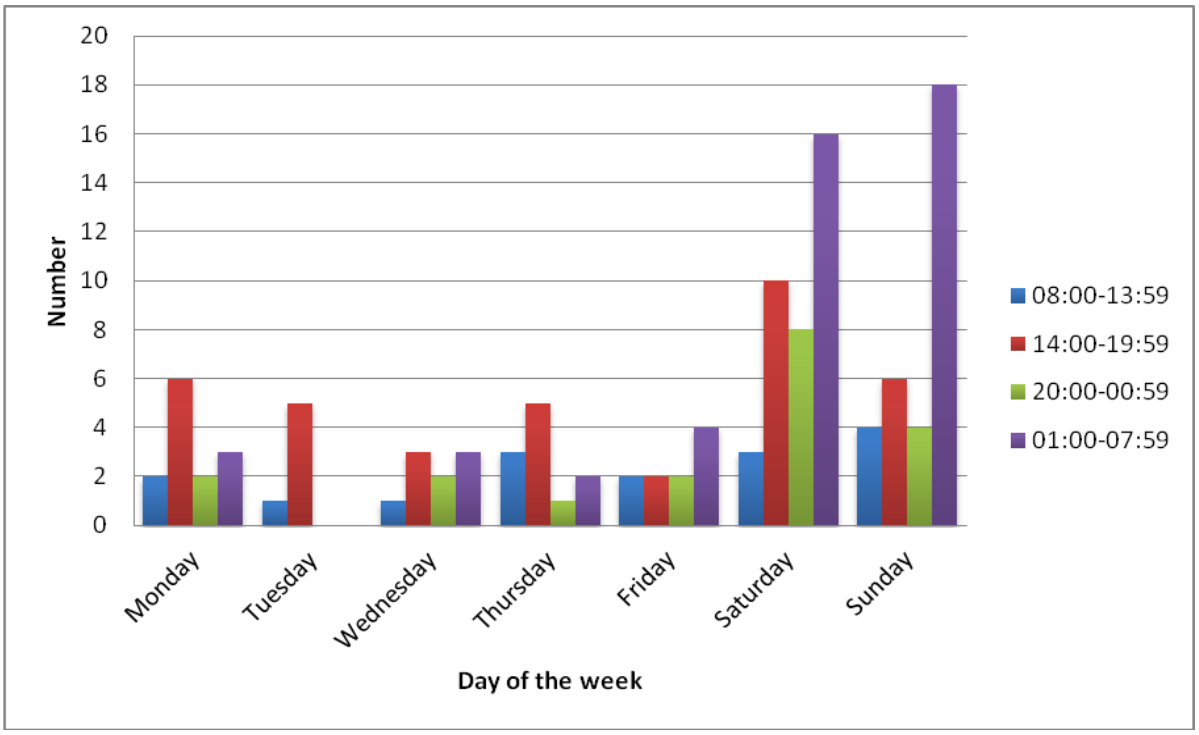

Figure 2. Number of accidents by day of the week and time of day (n = 118).

For the 236 incidents where information was available on **road type**, 115 (49 %) occurred on urban roads, 109 (46 %) on rural roads, 8 (3 %) on motorways and 4 (2 %) in other locations. The purpose of the journey was identifiable in 231 accidents. Most accidents – 147 (64%) – took place during a leisure trip, predominantly on Saturday and Sunday nights. Other notable journey types included: from home to work or school, 10%; from work or school to home, 17%; holidays, 4%. The nature of the journey is not recorded by the Italian Institute of Statistics (ISTAT). Only the work-related accidents are registered as such by INAIL, the Italian Institute of Insurance on Work-related Accidents, both if the journey took place during work time or in transit between workplace and home. The Police do not always specify the nature of a journey, respecting those limits of privacy that our confidential interview was appropriate – and able - to overcome. It is possible to see that the leisure time trips in our sample are more frequent than in official statistics. This finding is probably linked to the much higher number of accidents in these cases caused by driving under the influence and thus the drivers who were responsible for causing the accident avoiding reporting the accident to the Police.

In the 239 cases were the **mode of transport** was identified, the vast majority involved a car with 84,2% of cases. The next most common was motorised two-wheeled vehicles with 8,7%. All other means of transport (including minibus, bus and lorry) accounted for just 7% of cases. There is no way to compare this part of our sample with official statistics. As noted previously, police officers producing records for subsequent legal action refuse to apportion blame for an accident: victims are officially classified by their own mode of transportation, not by the mode of the driver who *caused* the accident. In the official statistics, the use of a car as the mode of transportation of the victim (not just of the driver who caused the accident) accounts for 55% for deaths and for 62% of injuries.

In the 202 cases where the **year of the accident** was identified, most occurred within the last decade with 157 (78%) of accidents occurring between 2000 and 2009. There were 33 cases where the accident occurred in the 1990s, 9 cases in the 1980s and 3 cases in the 1970s. The sample was constructed without attempting to control for the time from the accident as the

focus was on demonstrating the strength of the approach, which is even suitable for accidents occurring more than ten years ago.

The time since the accident occurred is an important variable, able to determine the inclusion or exclusion of the interviewee, but it is not possible to restrict it in advance. In fact, while using a health frame, this criterion can appear vague to a researcher, but there are very rigid criteria here too. For example, in one interview, the use of a seat belt for the mother and the use of a child restraint device could not be explored because of severe PTSD various years after the accident (see accident description on page 17).

Drivers' attitude to alcohol and other impairing substances

Before determining details of the main cause of the accident and of the driver's driving style (attitude to substance use before driving) at the period of the accident, our interviewers tried to get an overview of the role of various substances (i.e. alcohol, legal and illegal drugs) in the driver's general lifestyle. In the subsequent results, we see the driver's driving style in the same period, and finally substance use as a contributory cause of the accident. The distinction allows us to know whether that subject: consumed psychotropic substances in that period; used to drive under the effect of those substances in that period; was under their direct effect when causing the analysed accident. The differences between the three variables are important for evaluating three different effects of prevention campaigns.

Driver's general lifestyle prior to the accident

Of all the drivers in our sample, 62 were described as taking drugs during the period before the accident. The most frequently used illegal drug was cannabis, which was used by 47 of the 62 drivers who had used illegal drugs prior to the accident. Other drugs used included stimulants such as cocaine (5), opiates such as heroin (4) and other unspecified drugs (6). Consumption of psychotropic medicine was reported by 19 drivers. This does not mean that they drove under that influence (which is considered later). Of the 216 cases where alcohol consumption was known, there were 63 (29%) non-drinkers in our sample. The drinkers were equally split between those 'usually over the limit' 76 (35%) and those usually 'under the limit' 76 (35%). (Note that the consumption of alcohol considered here as a part of lifestyle, though independent from driving, has been referred to by the quantities allowed by law while driving. High quantities have been defined as "usually over the limit" and low quantities have been defined "under the limit", to make it easier to compare the alcohol consumption linked to or separate from driving. Of those using pharmaceutical substances (legal and illegal, n = 56), more than 57% were in the habit of mixing these drugs with alcohol, perhaps to intensify their effects. Once again, most used cannabis (32), but also psychotropic medicine (7), stimulants such as cocaine (4), opiates like heroin (4) and other drugs or unspecified substances (9). Table 4 shows how these figures compare with use of other substances. The overwhelming majority of respondents (95% of 206) indicated that their lifestyle habits were stable, being unchanged for a year or more.

Table 4. Numbers of drivers consuming various substances

Substance consumed	*Number*
Drugs	62
Psychotropic medicines	19
Alcohol (over the limit)	76
Alcohol (under the limit)	76
More than one substance	56

Of the 219, who indicated their preferred mode of transport, the car was chosen by 170 (78%). Two-wheeled vehicles were the next most popular, with motorised (12%) being more popular than pedal-powered (5%). Public transport was only chosen as preferred mode by nine drivers and walking by just one. The vehicle driven in the described accidents was almost always a car.

Driver's driving style at the time of the accident
Of the 241 analysed cases in the sample, 60 drivers combined the consumption of drugs with driving in the period before the accident (Table 5). The most popular drug was cannabis (43), with stimulants such as cocaine (4) and opiates such as heroin (4) also used, as well as other unspecified drugs (9). In addition, 17 drivers were using psychotropic medicines even while they were driving. Over a third of interviewees never drank before driving (39%). Of those 131 who did drink before driving, most (56%) admitted to being "usually over the limit" with the remaining (44%) claiming to be "under the limits".

Table 5. Driving under the influence of various substances (N = 241; n.b.the total number of substances (266) is higher than the number of accidents and the sum of percentages is higher than 100 because of multiple users).

Substance used before driving	*Number*	*Percentage*
Drugs	60	25
Psychotropic medicines	17	7
Alcohol (over the limit)	73	30
Alcohol (under the limit)	58	24
Alcohol with drugs or medicines	58	24

It was disturbing to discover that 58 drivers combined illegal drugs with alcohol before driving. The relative frequency of drugs was a similar pattern to that seen previously, with the most common being alcohol combined with cannabis (33), followed by psychotropic medicine (8), stimulants such as cocaine (4), opiates such as heroin (4) and other unspecified drugs (9). Of the 172 who gave relevant information, the overwhelming majority (164) reported that their DUI behaviour had been consistent for over a year.

Accident Causes
The sample presented here was constructed to facilitate the confidential description of the cause of at least 100 accidents that happened while the driver was DUI. In the sample, out of the 241 analysed accidents 120 had causes *other* than the driver being DUI of any substance (drugs, alcohol or medicines) and the remaining 121 occurred while the driver had some substance influencing their driving. Here, the main cause of the accident is reported based on the confidential interviews. The interviewee usually remembered very well all the possible causes of the accident, including the intake of substances. The confidential nature of the interview also facilitated the description of the motivation for a specific behaviour, e.g. a stressful event resulting in that behaviour.

Substance use
Alcohol consumption was known for 215 cases. At the moment of the accident, about half of the drivers had not previously consumed alcohol (111). Of those who had been drinking, 76 admitted that they suspected themselves as being over the limit at the time with 28 claiming to be under the limit. A striking number of the drivers (45) were driving under the active influence of one or more drugs at the moment of the accident. Once again, cannabis was most popular (27) followed by stimulants such as cocaine (5), opiates such as heroin (5) and other

unspecified drugs (8). A small number of drivers (13) were driving under the active influence of psychotropic medicine during the accident. The most frequent medicine taken was benzodiazepine (5), followed by opiates (2) with a single user of each of the following: anti-depressant, codeine, neuroleptic, stimulant, antibiotic and anti-epileptic.

Table 6. Substance use as a contributory accident cause.

Substance	*Number*
Alcohol (assumed to be over the limit)	76
Drugs	45
Combination of alcohol with drugs/medicine	39
Alcohol (assumed to be under the limit)	28
Medicine	13

A particular concern was the number of respondents reporting the combination of alcohol with legal and illegal drugs that may affect driving performance (Table 7). This is an important issue that it is difficult for the police to investigate because the alcohol limit may be respected by a driver, but may also be combined with other substances whose negative effects on driving may be exacerbated. Users of drugs are becoming aware of this way to avoid prosecution and they confidentially admit to paying attention to the best way to achieve the best "high", as they say, that is, a very high state of intoxication, while avoiding the risk of police sanction. While alcohol checks have increased in frequency over the last few years, drug checks remained largely static.

Table 7. Substances combined with alcohol affecting driving

Substance combined with alcohol	*Number*
Cannabis	19
Stimulants (e.g. cocaine)	4
Opiates (e.g. heroin)	2
Psychotropic medicine	6
Other drugs/unspecified	8

Other contributory accident causes.
About the driving behaviour of 225 drivers our interviews provided relevant information on risk seeking/avoiding, with 51% admitting to behaviours such as speeding and 21% to 'risk proneness'. Similarly, a majority of drivers 114 (53%) admitted to being physically impaired at the moment of their accident, with fatigue most common with 49, and 22 admitted falling asleep, 30 suggesting a lack of experience was a factor and 27 referring to other similar factors.

Interviewees revealed some inappropriate behaviours, especially those within the car, that are very difficult to detect by the Police - both in normal driving and in the event of an accident. The most common accident-causing behaviour was using the radio (22) and was more common than accidents caused by the use of a mobile telephone (5), which is more easily detected by the police. Other behaviours were responsible for causing the accident in 28 cases, including passenger aggression (3), animals in the vehicle (3) and smoking (3).
Bad weather conditions were reported as a cause of the accident in 58 cases. The most common weather problem was rain (34), followed by ice (16), snow (5), fog (2) and sunlight (1). Weather conditions are normally noted in the police reports of the accident. A number of drivers (56) highlighted problems in the road layout with 40 blaming poor road layout and in 10 cases poor signage. Vehicles problems were blamed by 20 respondents including: bald tyres (7), a burst tyre (2), problems with the braking system (3) and other unspecified

problems (8). Factors aggravating the effect of the accident include failure to use seatbelts. Of the 188 who provided relevant information, 99 claimed to be wearing their seatbelt at the time of the accident, 52 admitted to not wearing their seatbelt and 37 said they did not remember. It is likely that many of the 37 who "don't rememeber" correspond to "no", in line with results from the SARTRE survey. Not wearing a seat belt cannot be considered as causing an accident, but it can be responsible for transforming a crash from merely damaging the car (not classified as an accident) into a fatal accident.

Main cause of accident: DUI and other causes

If we bring together the main causes of the accidents as declared by our interviewees we see the importance of the influence of the various substances (see the previous Table 6). First, we can see the problem of drivers with alcohol assumed over the legal limit. Second, we can see the influence of drugs and, third, the problem of mixing alcohol with drugs.

Considering other factors, we can see the converging influence of the different variables, such as high risk seeking, inappropriate behaviour (e.g. using the radio), or an impaired physical condition (e.g. sleepiness). Our interviewees reported an impaired physical condition in 128 cases, risk seeking in 114 cases and other inappropriate behaviour in 55 cases. In normal conditions risk-seeking could be managed, but under the influence of alcohol or, worse, the influence of drugs in combination with alcohol, even using the radio can result in tragic consequences. Also the accidents detailed here all too often are the consequence of violations of many different rules of behaviour. In these cases where many factors are acting simultaneously, the simplest manoeuvre can contribute to an accident. For example, the consumption of substances that affect driving are most frequent during the nights and weekends showing clearly the worst time for such risky behaviour. If we examine the cause of the accident for those who were using such substances by day of the week we have the following pattern (Figure 3).

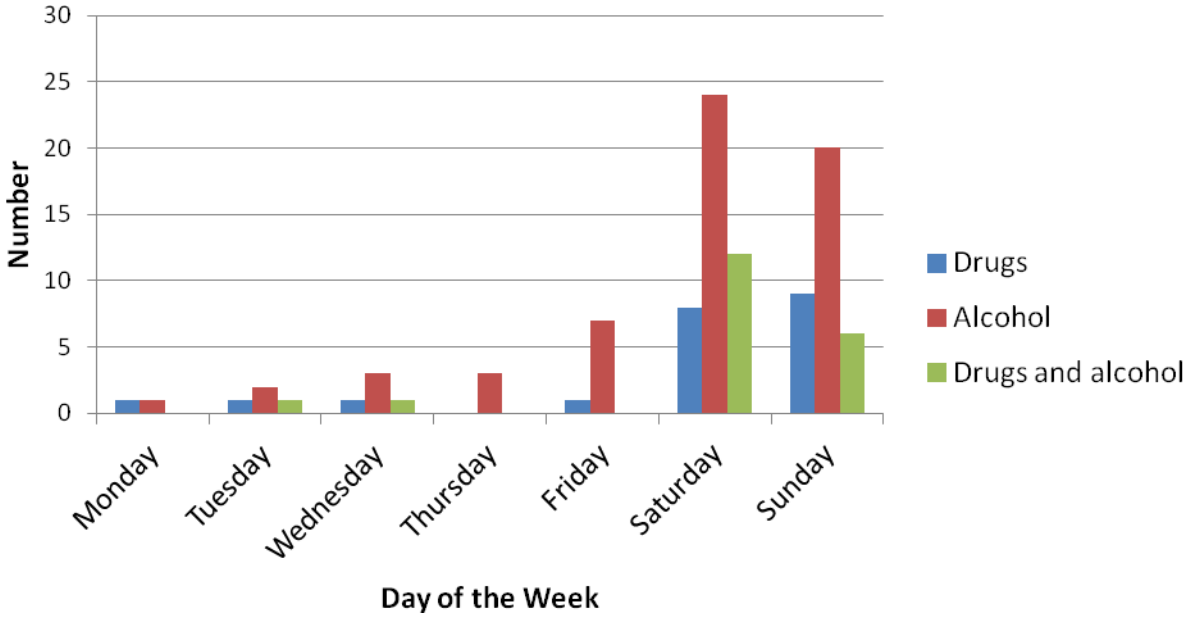

Figure 3. Number of accidents involving alcohol and/or drugs by day of the week.

COMPARISON WITH OTHER DATA SOURCES

Official Police records

As noted earlier, Italian official data, published annually by ISTAT, the Italian institute of Statistics, are taken exclusively from Police reports. For this reason, it is very interesting to know how the police engaged with the accidents described in our confidential interviews. Though independent, police officers are obliged to show their report to the persons involved in the accident and these reports can have an enormous impact on the future of the persons involved. It is very rare that the report - or its absence - was not perfectly remembered by the involved persons. Therefore, our interviews can describe what those reports have written, and also tell us the relationship between those reports and reality as perceived by our interviewees.

The following comparisons between reality and police reports, though being limited to our sample, do not suffer from the possible biases that we have noted when we compared the sample with the official data. On the contrary, our data may provide important insights into the official data, their reliability, their omissions and their distortions.

Interviewees were asked the extent to which the police fully and accurately recorded the accident. For the 235 cases where an answer was provided the responses are shown in Table 8.

Table 8. Official police record of the accident and interviewees' reports of accuracy (n = 235).

Police record of accident	*Number*	*Percentage*
Complete and correct	94	40
Registered, but incomplete	50	21
Known to police, but not recorded	11	5
Not known to police	80	34

We can see that only 40% of the accidents in our sample were completely and correctly recorded. Accidents involving criminal causes (e.g. driving at excessive speed) are suspected to be mainly in the other 60% as we noted in the Introduction.

The strength of the confidential interview approach can be demonstrated by reproducing some examples of relevant sections of the interview reports that relate to the Police records (that are used to produce the official statistics).

First, here are some of the cases (taken in their order of arrival to SIPSiVi) where the Police had no knowledge, and therefore no record, of the accident.

> *A second accident that I had while under the influence of a great deal of alcohol has not been recorded by the Police. We were alone in a country road and crashed against a tree. The doctor in the hospital must have realised that I was driving under the influence of alcohol from the smell of my breath, and asked my girlfriend whether she wanted to claim damages against me, but she did not.*

> *I had a solo accident previously on my motorcycle, not DUI, just speeding on an icy curve. Although I was hospitalized, nothing was known to the Police or insurance company.*

In another accident when I was alone, DUI of Methadone, I escaped before the police could come. I always drove under the influence of substances, but only alcohol is really dangerous.

While DUI of a lot of alcohol, speeding on the wet paved street, I "entered" the wall of a bank. The Police never knew about the accident. With a friend, we declared him to be the cause of the accident due to colliding with the rear of my car and pushing me against the wall, so the insurance company paid for my car.

I usually DUI of cannabis, even speeding, but I have never been caught by the Police, not even in the six serious accidents I had, mainly caused by my falling asleep. I take eye drops to prevent the Police from realising my situation. Only once have they discovered the hashish in my car, but they just took it away without doing anything else.

During the first accident I was "clean" from drugs and alcohol, having just ended a period in a specialized recovering community, but I was speeding twice the maximum allowed. Anyway, the other driver entered from a secondary road; he accepted responsibility and we did not inform the Police.

Another accident I had while my boyfriend was driving after drinking over the limit. This time too I was injured, my nose broken and I suffered a cranial-facial trauma. Though I was sure that the accident had been caused by drink-driving, I did not go to the Police, in order to avoid consequences for my boyfriend.

In a second accident, while under cocaine and a lot of alcohol, I was speeding too much, in competition with another car, feeling all powerful. In order to be ready to overtake, I remained always in the opposite lane, until a hump - beyond which I did not see a car coming against me. Both our cars were destroyed. It was a miracle that both of us survived. The other driver understood my intoxicated state and after a burst of anger he tried to calm me down. I accepted blame to avoid calling the police.

These road accidents include some major incidents involving serious damage to property and serious injuries to people, but were not reported to the Police. However, even more disturbing are cases where the Police were aware of the accident, but did not officially record it.

At 7am, after a long and late-finishing party with a lot of alcohol - though at 7am I think it should have already gone away - I was driving very fast from the sea to my workplace and I fell asleep, crashing against a wall. A municipality policeman passing there called the Carabinieri [Italian national police force], *so I hit him. The Carabinieri only fined me for speeding, because I showed them that I had been working as a volunteer in the army. I am used to drinking and driving in Italy, where I have never been stopped; this would not be possible in New Zealand, where I was prosecuted in a trial simply because I was caught asleep, drunk in my car in the roadside. The campaign for a designated driver is silly. I am clever*

enough to drink and drive as well as speeding, not because I'm in a hurry, but just for my pleasure.

I have never been caught by Police, except once: I was DUI of alcohol and heroin, I crossed a red light, and a BMW collided with my rear. I escaped, but after some kilometres the Police stopped me, arguing that my car had no licence plate in the rear side. Of the two police officers, the female one insisted on bringing me to their station in order to measure my BAC, but the male officer refused, just telling me to replace my plate within 24 hours. I did not care, knowing that nothing had been recorded. The licence plate reappeared later - with the other driver. I immediately admitted to have crossed a red light, and the accident has been recorded and compensated for this reason by my insurer, without any mention of my DUI.

Also disturbing are the cases where the accident was recorded by the police, but the real cause was not recorded. The descriptions below give an indication of the problems faced in collecting official statistics by relying on the Police to provide them.

I was under psychotropic medicines (Seroxat and Xanax), so I did not brake well when a bus, getting out of its stopping place, cut into my path. I collided with its rear and my car was destroyed and thrown to the opposite lane, where another arriving car crashed into mine. The bus escaped. When the Police came, they did not check whether I was DUI. When they started considering my claims against the bus, though it would have been easy to search for it, I accepted total responsibility so as not to be discovered to be DUI.

In the centre of my town, at 6pm, while under heroin and Tavor (5 pills), I fell asleep, therefore I cut straight the crossing and my car crashed into a parked car. A lot of people came, among them my parents. Since I was nearly unable to speak, only my father talked with the police who had arrived, and they attributed the accident to driving with excessive speed, but I was going at 50 Km/h in that busy centre of the town. I usually like to speed, especially when I add alcohol to the drugs.

In a fourth accident, on my scooter I collided with a female pedestrian who crossed on a red light. Being hospitalized, she claimed to the Police to have crossed on the green light, and I accepted this account, in order to avoid the detection of my DUI status.

The car driven by my boyfriend was hit by another car with the driver clearly drunk. The two passengers escaped, and also the driver attempted to do so, but his car was too damaged, and the Police were very close to that place. When we saw that no-one measured his BAC, we also called the Municipality Police and they came after an hour, but no-one made any BAC assessment, despite our insistence. After the accident I cried for two days, hysterically.

It is important to remember that the Police did record the cause of the accident completely and correctly only for 40% of our sample (although we did not include in this category cases

where our interviewee simply suspected that a substance that might affect driving was present but had no formal evidence of use).

It is alarming that, out of a sub-sample of the 30 first accidents described in the study, the role of the substances such as alcohol and illicit drugs appears to have been completely recorded in the official statistics in only the last, 30th case, reported below:

> *Our son, aged 21, and another of his friends died in the accident. The car was our own, but the driver was one of his friends - we don't know why. The driver lost control of our car, and a lorry crashed on the side of my son and of the other boy in the rear seat. The driver survived, being on the opposite side; he claimed not to remember anything of the accident. But Police measured his BAC, and found him over the limits, and their analyses found also some illicit drugs - we don't know which ones. We could have had more details from the trial if we had decided to officially participate in it, but we decided not to, not willing to be involved psychologically in those painful debates, especially while our other son was terribly suffering for the loss of his brother, about which the Police informed him the following morning. In addition, our lawyer envisaged some risks for us to be prosecuted for having allowed our car to be used by that boy. Perhaps the drugs found in his blood were taken a day before; it seems strange that our careful son allowed him to drive the car under the influence. We were terribly traumatised, and especially also our other son. Though he was 24, he wanted to sleep with us in our bed for some days after the accident, and later in another bed in the same room as us for some time afterwards.*

It is important to recall that the psychologists carrying out the interviews had no incentive in preferring any type of accidents. Payment for the interviews was determined by the completeness of the description, not by any preferred accident cause, nor by the Police involvement, nor by any other characteristic of the accident or of the driver who caused it, namely not DUI.

Official Police records – information from interviewees

There are two particularly interesting types of cases. In the first type, the police recorded the accident, but ignored any substance used; in the second type, the police did not register the accident, though caused by substances. In our interviews, we found 19 cases where substances were used, but not recorded by the police, including seven incidences of cannabis, five of opiates such as heroin, one of a stimulant such as cocaine and six where the drug was not specified. Similarly, there were 19 cases where interviewees reported that the accident was caused by drugs, but not recorded by the police. In 17 of these cases (14 of them involving cannabis), the police were unaware of the accident. In two of the cases the accident was known to the Police, but not formally recorded.

In 26 cases, the police did register the causal role of drugs in the accident, but only seven cases were completely and correctly recorded. In the remaining cases, the interviewees believed that drug use had been downplayed as a cause of the accident. In all four cases where opiates were seen as a causal factor, their use was not recorded by police. As supposed above, even though the police recorded the accident that happened under the influence of drugs, the majority of these causes have been ignored in the official records.

Our confidential interviews contain six declarations of use of medicines as the cause of the accident, but not one of them was detected by the police during their collection of information. The regulations against driving under the influence of medicines appears to be very strict, even too strict, as we are discovering in WP 1.2 investigating any impairment in driving caused by Risperidone (Ramaekers, 2011), but there is a lack of information on implementation so the police do not enforce these rules.

As we have seen above, 76 accidents in our sample were caused by an alcohol level that the driver suspected as being over the limit. In 22 of these accidents, alcohol was not detected by the Police, though the accident was registered by police officers. In addition, there were 14 accidents where alcohol caused an accident where the police made no official record; in twelve cases the accident was not known to the police and in two of these cases the police were aware of the accident but made no official record. In only 20 cases was an accident caused by alcohol registered as such by the police with only six cases reported by our interviewees as completely and correctly registered.

In the (very dangerous) case of driving with a combination of alcohol and drugs it appears that in 14 cases the police have not registered this circumstance (see Table 9).

Table 9. Substances combined with alcohol, but not recorded by the police.

Substance combined with alcohol	*Number*
Cannabis	5
Stimulants (e.g. cocaine)	1
Opiates (e.g. heroin)	2
Psychotropic medicine	1
Other drugs/unspecified	5

There were 14 cases of "High risk seeking" that were not detected by the police during their gathering of information. In our sample, 48 drivers were subject to various impairing physical conditions other than driving under the influence that were ignored by the police records, even though this information should have been recorded. Causes like "fatigue", "lack of experience" and "sleepiness" were given as reasons for the accident by a total of nine interviewees.

Official Insurance records

In the Introduction, we described how Italian law on insurance companies (No. 990/'69) enables them to earn more, the more they pay in damages for accidents. Consequently, they have no incentive to determine what really occurred, including any behavioural causes. The percentage of accidents from our sample registrated by the insurance companies is rather similar to those included in police records. Causes ignored in part by the insurance company amount to 24%, even higher than that of the police (21%). Only half (48%) of our accidents were completely and correctly registered for insurance purposes, 26% were not communicated to the insurance company and 2% were communicated to the insurance company, but not formally registered. In 20 cases registered by an insurance company, substances were used but not detected, including nine cases of cannabis use, four of opiates such as heroin, two of stimulants such as cocaine and five where the drug was not specified. There were four declarations of use of medicines as cause of accident but not detected as such by the insurance companies. With respect to alcohol, 23 drivers admitted being over the alcohol limit, but not one was recorded as such in the official records by their insurance company, not even the few ones who have been recorded as such by the Police. This finding is in accordance with the previously described lack of interest in saving money by Italian

insurance companies, who would be allowed to claim back the damages from the guilty drivers, at least from those identifed as such by the Police.

Similarly, in 13 cases the insurance company did not register the combination of alcohol and drugs as the cause of the accident, including six cases where alcohol was combined with cannabis use, two where alcohol was combined with stimulants, one where alcohol was combined with opiates and four cases where alcohol was combined with another drug.There were twelve cases of "High risk seeking" in our sample that were not detected by the insurance companies. Even more notably than in the police records, other impairing physical conditions as the cause of the accident was missing in the insurance records, with two cases of fatigue/sleepiness, two where the interviewees admitted falling asleep and three cases of other similar types of behaviour. As in the case of police records, the classification of "other incorrect behaviours" appears to be vague. In contrast our confidential interviews are better able to determine these behaviours so that appropriate measures (e.g. awareness campaigns) can be devised and implemented to address these problems.

Official Health records

Accident prevention, just like any other prevention of health problems, should be an aim of the health system. Indeed, it is formally declared as such by the national health programmes and this declaration includes the duty to correctly and completely record the causes of accidents. This happens only a little more often than is the case of police and the insurance companies. The accidents incompletely recorded by the health system were only 19% (45 out of 235), the lowest rate of the three sources of official statistics. However, the percentage of accidents completely and correctly registered is almost the same, 41% compared to 40% for Police records (and 5% were communicated to the health system, but not formally recorded). The reason for these incomplete – and misleading - records may be similar to those regarding the insurance compaines since the financial incentives for the health providers are proportional to the amount of services provided, under the Diagnosis Related Groups (DGR) system and not to the reduction of accidents nor to any increase in knowledge of their causes.

In 14 cases some substances responsible for causing the accident were not recorded. Once again, the most common substance was cannabis – with six cases – followed by two cases of opiates, one of stimulants and five cases where the drug used was not specified. In only two cases was the use of medicines attributed as the cause of the accident but neither case was recorded by the health system as being the direct cause of the accident. This highlights the importance of studies on the impairment caused by psychoactive medicines, as have been conducted under the DRUID project (Ramaekers, 2011). In our interviews, we identified 17 drivers who admitted probably being over the alcohol limit at the time of the accident (with two having consumed alcohol but believing themselves to be under the limit), but no-one was registered as such in the official records of the health system. While there are problems for Italian police in testing at the road side for substances other than alcohol, this testing should be simpler if the injured person is in hospital. However, there are still cases evading that assessment including five cases of alcohol combined with cannabis not being detected, four of alcohol with unspecified drugs and one case of alcohol together with a stimulant. There were eleven declarations of "High risk seeking" being a factor and not detected by the health system during their information collection.

Comparison of statistics from different sources

Official statistics in comparison with interview sample

The Italian Official Institute of Statistics (ISTAT) every year publishes detailed statistics on road accidents, derived from police activity mainly recorded soon after the accident in order

to attribute responsibility for the accident. However, ISTAT data only include accidents where persons have been killed or injured. The data do not include damage-only accidents, nor accidents causing only psychological traumas. For 2007, when most of the accidents described in this study took place, these official statistics reported a total of 230,871 accidents, with 325,850 injured (1.4 injuries per accident) and 5,131 fatalities (.022 deaths per accident).

In contrast, our sample of 241 accidents shows a very different pattern. In eleven cases it was not possible to determine appropriate or complete information on consequences but, in the remaining 230 cases, 15 people were killed, 2 people had physical consequences, 85 people had only-psychological consequences and 128 people had both physical and psychological consequences. It is important to examine at first the differences between our sample and the official statistics, concerning only accidents having physical consequences. In our sample, there were 145 accidents involving physical consequences. Therefore, we have 15 deaths out of 145 accidents of the type recordable as such by the police. This corresponds to a fatality index of 10.3 %. In contrast, the fatality index of the official ISTAT data is 2.2%.

The reason for the higher rate of fatalities in our sample may be that PTSD and the need to be psychologically supported increases accordingly with the severity of the accident, and especially where death occurs, particularly shortly after the accident. Another reason for the higher rate of injuries compared to deaths in the Italian official statistics may be that physical damages are frequently exaggerated or simply invented because of the interest of the innocent party in increasing their compensation from the insurance company of the guilty driver. This distortion is particularly great in Italy, because of the lack of interest of the insurance companies to reduce reimbursement deriving from legal regulation No. 990/'69. Neck injuries (e.g. whiplash) amount to 70% of the consequences of accidents in Italy, while in France they were reported some years only in just 5% of accidents. Other national official statistics, such as France, have managed to distinguish between severe accidents and less serious accidents, in order to be able to conduct studies on severe accidents as reliable as those conducted so far on fatal accidents. The difference between our sample and the official statistics is crucial, as we include also accidents that simply disturbed the interviewee, although without physical consequences. It is important to note that the confidentiality of the interviews reduces the likelihood of any distortion in the description of all these accidents

Official statistics on the causes of accidents

The Italian High Institute of Health (ISS) issues periodic statistics on the prevalence of drug, alcohol and medicines use in Italy. Some preliminary studies describe the prevalence of such substances in drivers who have been killed in road accidents (for example, see http://www.iss.it/binary/sicu/cont/LIBRO%20II%20(1-18)%20SITO.1119430208.pdf). However, the prevalence of substance use during driving is unknown, as ISS states on the same website. The number of controls on substance use, essentially for Blood Alcohol Concentration, has increased from 200,000 cases in 2005, 1,200,000 in 2007 and up to 1,800,000 in 2008. Meanwhile, people detected as Driving Under the Influence (DUI) after having caused an accident increased from less than 2% in 2005 up to around 3% in 2008. In 2007, the official ISTAT data found only 2% of accidents were registered as being due to the influence of alcohol and only 0.3% of accidents were registered as occurring under the influence of drugs and/or medicine. The reasons for such low percentages cannot reasonably be considered a result of satisfactory policy. Instead, according to our interviews, it is a reflection of limited testing affecting the official statistics.

As previously discussed, due to differences in the way that the official data are collected and the data collection method used in this study, there are some very important differences seen when confidential interviews are carried out by psychologists. Almost a third (32%) of our interviewees admitted that they had been over the limit for alcohol at the time of their accident. This high percentage may be biased by the criteria for the selection of cases, as previously discussed, but our reports are likely to be less subject to distortions than the information given to the police due to the confidentiality of the interviews.

In our sample of confidentially described accidents alcohol over the limit (OTL) appears as a cause twelve times more often than is reported in official statistics. In our sample we found that 31 (21%) drivers reported themselves as being under that influence of alcohol (out of the 145 drivers who caused the type of accidents that qualify as suitable for recording by the Police) compared to 2% in the official data. Even more noticeable is the difference with the official statistics when we consider accidents caused by a driver under the effect of drugs and medicines. Just over a quarter of our interviewees (26%) admitted to being under the influence of drugs and medicines at the time of the accident, compared to 0.3% in the official statistics, i.e. 86 times as frequent.

The limits of our sampling strategy have already been discussed. Nevertheless the neutral position towards the causes of the accidents of the psychologists conducting the interviews produced general characteristics of the sample that were rather similar to those of the general population of drivers having been involved in an accident. We can only use this as a basis for a comparison between the sample and the general population because ISTAT does not publish statistics characterizing the persons who were formally deemed to have "caused" the accident, whereas it can be done using our confidential interviews. In the official statistics, the involvement of individuals is possible only when there are deaths or injuries. However, this does not prevent ISTAT from attributing to each accident a "presumable cause", as we have seen. The main limiting characteristic of our sample is a relative lack of the elderly who are probably less interested in psychological intervention for cultural reasons. The higher percentage of youngsters in our sample is probably responsible for more accidents occurring in leisure time (the weekend and especially Saturday) and occurring more often in the night hours. This higher percentage of youngsters partly explains also the higher percentage of driving under the influence. All these variables should be considered before drawing quantitative conclusions.

So far, we can only consider this study from a qualitative point of view. In fact, before having studied the characteristics of the sample, the much wider amount of driving under the influence confidentially reported to SIPSiVi, though qualitatively important, cannot be deemed to correspond exactly to real information missing from the official statistics. Moreover the territorial distribution, mainly focused on northern regions, has been determined by the even lower reliability of the police operations in the southern regions of Italy. But, despite all these biases, we see a considerable number of substantial similarities between our sample of drivers having caused an accident and the general population involved in accidents that appear in the official statistics.

DISCUSSION

The methodology used to select our sample does not guarantee its representativeness. In the official statistics for Italy (IVth Report of the Government to the Italian Parliament 2008, Vol. II, page. 329), the percentage of males involved in road traffic accidents is 64%. The consequences of accidents involving young males are more severe, with more deaths rather than injuries, so that the "social cost" of their accidents amounts to 67% of the total costs. In our sample, the percentage of the male drivers having caused an accident amounts to 67%, very similar to the share of the social costs. As we have seen earlier, the mortality rate in our sample is much higher than the same index in official statistics. This could be seen as a problem if we were claiming that our sample was representative, but it could also demonstrate that a sample derived from a neutral offer of psychological help to persons involved in accidents tends to better reflect the social costs, reflecting also the amount of psychological damage produced by the accidents. However, as we will see, our findings suggest that the official statistics are also unrepresentative.

If compared with the general population of drivers causing accidents, our sample broadly corresponds to the typical distribution of accidents by age, but with underrepresentation of the elderly, probably due to them being less willing to participate in a psychological interview about the accident.

The interviews produced more results than were initially expected. However, other environments, such as the emergency room of hospitals, rehabilitation centres and similar institutions, were trialled as locations to recruit interviewees, but were abandoned for reasons of confidentiality.

This report does not try to draw conclusions from the description of the various impairments reported by the drivers themselves, though these were frequently described in our interviews. This subjective evaluation would require more cautious tools to become useful, but from our data it is not possible to draw a scientific estimate of risks proportional to any substance taken. Even more difficult is to determine from our interviews an exact description of the quantity, or even the identity, of a consumed illegal substance. Our interviewees frequently do not know the nature and composition of the substance purchased from their dealer, instead focussing on the intended effects. If this procedure is to be repeated and strengthened, it would become possible to plan the offer of psychological support for PTSD to be made immediately after the accident, possibly including not only interviews of this kind but also taking samples of hair, saliva, blood and/or urine to determine substance use. Currently, we have considered such procedures to be premature and they might compromise the confidential atmosphere of the interview.

Statistics for the north of Italy were considered to be of high quality and we limited our interviews to the North. In contrast, the official statistics for the South of Italy, criticized by Adv Jàn Mazàk from the EU Commission (see Supreme Court 2009 on case C-518/06), are characterized by too many false accidents that are officially accepted while many real accidents are not transmitted from the local police to the central ISTAT offices. Ironically, because of these two contrasting trends Naples has become one of the most expensive regions for road insurance, despite the official statistics recording half the fatality rate of the safest regions in the world: just two deaths for every 100,000 inhabitants, in a recent year. Even the official statistics for Northern Italy have important omissions and distortions as reported in various European surveys conducted by EU projects (SafetyNet, SARTRE etc.), but much fewer than for the Southern regions. This is a further limitation of the comparability of the

results of this study with the official statistics, in addition to the other limitations deriving from the difficulties described above, especially in the selection of cases. But using the scientific method allows the progressive detection of these biases. After appropriate corrections, the different types of information can be compared.

The study design had to consider the particular rights of these participants, who are victims themselves, even when they are also offenders. In particular, they have the right not to be forced to worsen their own pain. In practice, these ethical issues are still affected by national regulations, both legal and professional, very different in quality and quantity from each other, and far away from becoming harmonised at a European level. Italy is considered to maximize ethical guarantees for the guilty person, leaving too many crimes unpunished. However, many distortions that we have discovered from these Italian confidential interviews could also exist in the official statistics of any other country. For example, the tendency to avoid any contact with police after an accident caused by alcohol, which reduces the accuracy of Italian official statistics, may not be weaker, but could actually be stronger in other countries, where the guilty driver does not have such strong ethical guarantees that impede enforcement and punishment.

Some of these discoveries from confidential interviews could also require other investigation. For instance, a guilty driver while describing the way he has not been caught by the Police after having crashed into various cars in an accident under the influence of alcohol and drugs, disclosed the existence of an informal and illegal organisation of car-body repairmen. This organisation behaves as intrusive 'rescuers' who intercept the Police radio, and arrive at the scene of the accident before the Police. They then propose to the driver that, in order to avoid any official investigation, they will remove the driver and his/her car. As a result, they will probably get a much higher payment from the driver for the subsequent repair of car-body damages. For a further payment, they also suggest to the injured driver to get medical assistance separate from any police inquiry. The police, arriving at the scene of the accident a few minutes after the scene had been cleared, should not give up. Instead, they should conduct another kind of investigation - on the illegal organisation of car repairers.

An initial aim of the study was also to interview police officers in the same confidential manner, in order to detect reasons for the distortions emerging in the official data collection. While proposing the initial study design, we did not exclude the confidential interview of police officers, since sometimes they can also be considered traumatised and needing psychological help and there is also evidence of PTSD in these kinds of rescuers. But Disaster & Crisis Psychology has also demonstrated that PTSD does not always appear, especially in expert rescuers, after many interventions. Therefore, it could have been controversial for our interviewers to receive this kind of personal information from police officers while maintaining confidentiality even if asked to disclose it by a judge. Article 365 of the Italian criminal code only exempts health personnel, during assistance to patients, from the obligation of reporting such crimes. A short pilot study showed that police officers were able to describe severe accidents without being affected by PTSD, therefore not needing a therapeutic support. It would have been important to be able to report their testimony, especially about the reluctance to record DUI of drugs, as too difficult to be sustained in the long Italian trials.

Even using only the 'proper' victim of accident-induced PTSD as a source, it appears from our study that there is a high percentage of cases where police officers and other rescuers clearly recognize the presence of alcohol or drugs, but prefer to ignore it. From the few confidential interviews we got from policemen we could see some motivations for this

avoidance behaviour. The main problem appears to be a lack of confidence of the policemen themselves in the legal process, which always seems to benefit the guilty driver, as well as their pity for the addicted person. This attitude of pity and mercy has an important role in encouraging the confidence of the guilty driver towards the interviewer, seen and treated as a confessor in the Catholic tradition of Italy. Other countries are perhaps more rigorous in reducing these distorted descriptions of accidents by their police forces.

However, there are already some ways to tentatively derive from this analysis the different degrees of impairment caused by the different substances. For instance, we can compare driving style (including the habit to drive under influence of specified substances) and the main cause of the accident (number of accidents caused by the same subject, or the same group of subjects characterized by consumption of the same substance). Then, it is possible to draw some comparisons between the number of accidents associated with the habit of driving under the influence of the specified substance. For example, in our sample there was a lower number of accidents where cannabis was used, an intermediate number in the case of alcohol levels assumed to be over the limit, and a higher number in the case of cocaine use relative to the incidence of such behaviours.

These are so far only tentative results, but this methodology can be used in risk evaluation if the sample were to become wider and better chosen in order to become more representative of the population. It would then be possible to draw useful suggestions for policies, especially when comparing the consumption of substances as part of driving behaviour with consumption of the same substances as part of the driver's lifestyle. We know that there are better ways to compare the different impairments produced by the different substances, especially in DRUID, and also within this epidemiological work package, where more reliable data that have been collected from other sources (e.g. road side surveys, hospital studies etc.) are compared. The specific role of this study is to integrate those studies with the confidential sources.

The neutral offer of psychological support has revealed a group of accidents where the incidence of the alcohol level of the driver being over the limit appeared as a cause twelve times more frequently than reported in official statistics: 31 out of 145 (21%) in the type of accidents recorded by police compared to one driver in fifty (2%), in the official statistics. Teodora Macchia, a researcher in the Italian Institute of Health, has recently noted that, according to an estimate of that Governmental Institute, accidents caused by people driving under the influence causing an impaired physical or mental condition correspond to 30% of the total casualties that occur on Italian roads (see http://www.iss.it/ssps/rili/cont.php?id=696&lang=1&tipo=2). Even worse is the difference emerging between official statistics and the facts described in our sample when we consider driving under the influence of other impairing substances. From our confidential interviews driving under the influence of drugs and medicines appears 86 times more frequently than in official statistics: one driver out of four in our sample compared to three out of 1000 in the official statistics

It is difficult to directly compare the contribution of the confidential knowledge obtained in our interviews with that of the official data, except in one important case: when the confidentially described accident has been also registered by the Police and the confidential description is sufficiently detailed to allow comparison between the Police record and the reality described by interviewees. The comparisons shown between actuality and the Police reports are important as our confidential interviews minimize the possible biases that may have occurred. Data from our sample may provide important insights into the official data in

the areas of: reliability, omissions and distortions. Considering the frequent description of efforts to escape from Police contact or detection when driving under the influence, a reasonable hypothesis can be proposed: the much lower number of accidents caused by driving under the influence in official statistics compared to our sample could be directly related to those successful attempts to withdraw these accidents from registration by the police. We saw from the description of the Police intervention that alcohol being over the limit was registered as the cause of the accident in only six cases, while it was a relevant causal factor in 76 accidents in our sample. Even if we restrict the scope of this sample to the 145 cases suitable to be recorded by the Police, the occurrence of this cause being detected by the Police becomes just 4%, double the 2% appearing in the official statistics. If we consider that our sample has been limited to the northern part of Italy, where alcohol checks are more frequent than in the southern part (obviously included in official statistics), the characteristics of the sample do not appear too different from the general population, and the results not irrelevant for future enforcement campaigns.

For the same reasons, it is even more alarming that there is an even larger disparity for the substances having caused accidents between our sample and their detection by the Police, the Health System or by insurance companies. The report of the official statistics, that 0.3% of accidents were attributed to driving under the influence of psychotropic substances becomes highly questionable, and highlights the urgent need for routine testing for such substances. But the fact that these results are limited by the small size and restricted scope of the sample demands further and more extensive research. An integration of this study would still become possible in the prolonged time of DRUID (or in other projects) in consideration of the results seen in other Tasks of the WP2 epidemiology, in order to better focus on the characteristics of those consumption habits emerging as more dangerous and requiring deeper analyses. Our sample already shows that these new types of consumption, mixing the allowed level of alcohol, some allowed medicines, and some drugs not usually controlled in the (infrequent) police checks, are currently ignored in Police records of accidents. It is easy to foresee that, without a specific intervention, the still small numbers of accidents caused by a combination of alcohol and other impairing substances will continue to grow in the future. Some observations about these omissions in our prevention policies can be already drawn as first conclusions of this study.

CONCLUSIONS

As envisaged by the Commission's direction that was mentioned at the beginning of this report, if we succeed to remove the legal consequences of road accidents in our research, we will know much more of them. We will know their causes with no more suppression of the criminal causes, namely driving under influence of drugs, alcohol and medicines. From our confidential interviews we obtained reliable information about a number of accidents that had been hidden from Police records by the specific efforts of the guilty driver, of his friends, his parents and relatives, and even by some hidden organisation of car-body repairers. In addition, we knew from these confidential descriptions that even when our Italian police officers arrive in time to deal with the accident, they do not always check its causes, especially driving under the influence. Without doubt, the construction of our sample implies some distortion of what would be found in a representative sample, but the distortions seen in the official data appear now to be even worse and not yet properly analysed.

In addition, the official statistics of other countries ignore, for instance, the driver's life style, and their related driving style. In contrast, from our confidential interviews we see that these habits have an important role in the cause of the accident, and also, in different ways, the subsequent description of the accident. Various interviewees admitted that at certain times their drug usage increased their susceptibility to engage in risky behaviour even if they were not using drugs immediately preceding the accident and also increased their readiness to accept responsibility for the accident, even when the other driver was actually mainly responsible for the accident.

Moreover, Figure 4 reveals that the usual lifestyle habits do not appear to be different from the habits of driving style when the common characteristic is the consumption of such substances. A slight improvement in this separation appears in alcohol consumption, but only in persons already paying attention to the alcohol limits. Some of them have stopped drinking before driving, and as a whole this group causes fewer accidents. This demonstrates a first, partial effect of the enforcement against alcohol, but it still has to be improved and expanded on for the more dangerous groups. The same trend is regretted in the Italian Government's report to Parliament in the following years (Giovanardi, 2010): heavy drinkers, especially youngsters, did not reduce their separation from driving under the influence, so that a zero tolerance of alcohol has been introduced in our legislation for novice drivers in 2010. The good news, shown also in the above mentioned report, is that recently the consumers of illicit drugs are diminishing in the whole Italian population, but the separation between the drug use and driving, as shown also in the following figure, does not seem to be improving.

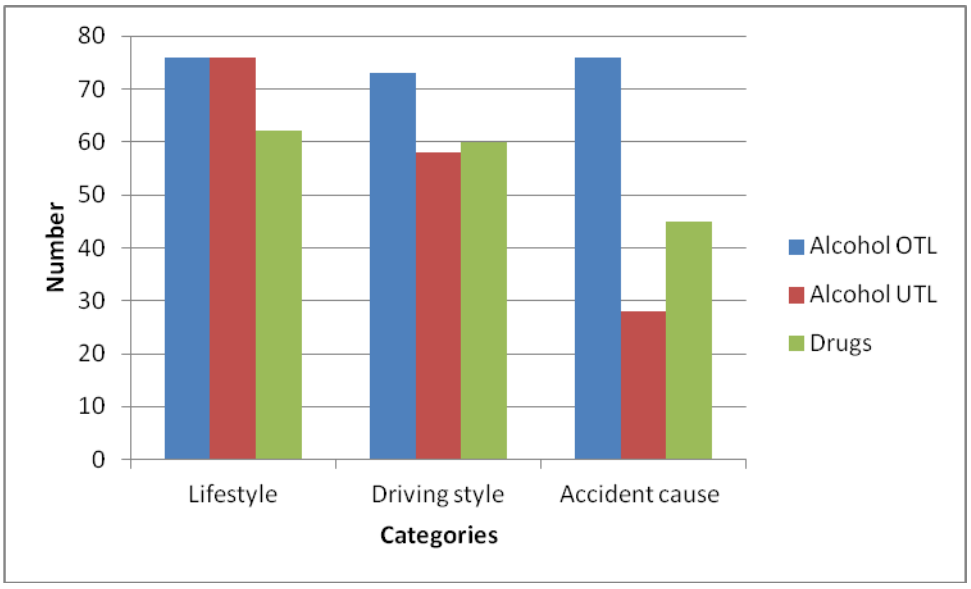

Figure 4. Comparison of substance use in lifestyle, driving style and accidents for alcohol assumed to be over the limit (OTL), alcohol assumed to be under the limit (UTL) and for drugs (other drivers excluded in this figure).

No similar improvements in behaviour appear to have been achieved for driving with drugs and medicines, where lifestyle and driving style do not differ at all. Out of 62 drivers declaring drugs as part of their lifestyle, only 60 claimed to separate their drug use from driving. It is hardly astonishing that 45 of these drivers reported having had an accident while driving under the influence of drugs. Our interviewees barely remembered campaigns against driving under the influence of alcohol or other substances, though this point was explicitly investigated by the interviewers. Only a few persons recalled hearing about the designated driver (also named "Bob" in some parts of Italy), but without effectively connecting this with their driving habits.

In conclusion, we may understand that the characteristics of the drivers who caused accidents are quite different from those emerging from the official statistics. Integrating other research with the results from our interviews will enable policies to become more appropriate to improve risky behaviours of drivers that are currently ignored, not least in their alarming prevalence of impairing substances.

Acknowledgements
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REFERENCES

Berghaus, G., Ramaekers, J.G., Drummer, O.H. (2007) *Demands on scientific studies in different fields of forensic medicine and forensic sciences.* Traffic medicine—Impaired driver: Alcohol, drugs, diseases. *Forensic Science International, 165*, 233-237.

Bernhoft, I.M. (2005) *Drugs in accident involved drivers in Denmark, IMMORTAL, Impaired Motorists: Methods Of Road-side Testing and Assessment for Licensing,* available from http://www.immortal.or.at/deliverables.php#R4.6

Blanchard, E. & Hickling, E. (2010) *"After the Crash: Assessment and Treatment of Motor Vehicle Accident Survivors"* published by The American Psychological Association, see http://www.apa.org/pubs/books/4317900.aspx

Bureau d'enquêtes sur les Accidents de Transport Terrestre (BEATT) Available at http://www.bea-tt.equipement.gouv.fr/le-bureau-d-enquetes-sur-les-a1.html

Carbone, P. (2009). *Le ali di Icaro: Rischio e incidenti in adolescenza (The wings of Icarus: How to understand and prevent accidents in adolescents).* Rome: Bollati Boringhieri.

CAST - Campaigns and Awareness-raising Strategies in Traffic Safety, available at http://www.cast-eu.org/

CEPLIS, *Common values of the Liberal Professions in the European Union* (2007) Available at http://www.ceplis.org/ckfinder/userfiles/files/En/common_values.doc

Court of Justice, Case C-518/06, *Social protection for victims of road traffic accidents,* 28th of April 2009, available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62006CJ0518:EN:HTML

Edward B.B. and Hickling, E.J. (2010). *After the Crash: Assessment and Treatment of Motor Vehicle Accident Survivors*. New York: American Psychological Association.

Elliman, R. et al. (2007). *Proposing a Framework for Pan-European Transparent and Independent Road Accident Investigation,* published by the Association for European Transport and contributors. Available from http://hdl.handle.net/2134/3297

European Commission (2001). *White Paper – European Transport Policy for 2010: time to decide.* Office for Official Publications of the European Communities, Luxembourg

European Commission (2003). *Saving 20.000 lives on our roads – A shared responsibility*. Office for Official Publications of the European Communities, Luxembourg.

European Transport Safety Council (2001). *Transport accident and incident investigation in European Union*. ETSC, Brussels. Available from http://www.etsc.be/documents/accinv.pdf

Forward, S. (2009) *Motives behind risky driving – driving under the influence of alcohol and drugs. DRUID project.* Available in http://www.druid-project.eu/

GIDAS, *German In-depth Accidents Study*, (since 1999) available at http://www.bast.de/nn_82220/EN/e-Aufgaben/e-abteilung-f/e-referat-f2/e-gidas/e-gidas.html

Giovanardi, C. (2010) *Relazione annuale al Parlamento sull'uso di sostanze stupefacenti e sulle tossicodipendenze in Italia* Available in http://www.politicheantidroga.it/media/333133/relazione%202010.pdf

European Union (2003) *Inter-institutional Agreement on Better Law-Making*, available at http://europa.eu/legislation_summaries/institutional_affairs/decisionmaking_process/l10116_en.htm

ISTAT (2007). *Road Accident Statistics: Year 2007*. Available from: http://www.istat.it/salastampa/comunicati/non_calendario/20081120_00/

Laapotti, S. & Keskinen, E, (2009). *Relative risk of impaired drivers in fatal motor vehicle accidents in Finland, DRUID-project.* Available in http://www.druid-project.eu/

Mansfield, H. et al. Analysis of the On The Spot (OTS) Road Accident Data-base, available at http://www.righttoride.co.uk/virtuallibrary/statistics/roadaccidentdatabaseOTS.pdf

Krueger, H.P, & Hargutt, V. (2008) *Theoretical Framework For Substance Effects on safe Driving, DRUID-project, available in* http://www.druid-project.eu/

Ramaekers, J et al. (2011) Effects of medicinal drugs on actual and simulated driving, available at http://www.druid-project.eu/

Sardi, P.A. (2003). *Il ruolo degli psicologi nel miglioramento della sicurezza stradale*. ISS (Italian High Institute of Health, Department on Environment and Traumas). Available online http://www.iss.it/binary/stra/cont/L_2003_288.pdf

SARTRE *project on Social attitudes to Road Traffic Risks in Europe*, available at http://sartre.inrets.fr/

VALT, *Traffic Safety Committee of Insurance Companies, Finland*, available from the ERSO website: http://erso.swov.nl/safetynet/content/finnish_motor_insurers_centre_finland.htm

Walter, M. & Hargutt, V. (2011) Prevalence of psychoactive substances and consumption patterns in traffic, based on a smartphone survey in Germany (pdf 1960-KB) available in http://www.druid-project.eu/

Zotovic, M. and Stanulovic, N.K. (2002). *Time heals all sorrows? PTSD and its consequences four years after experienced trauma*. In Powell, S. & Duraković-Belko, E. (Eds.) (2002). *Sarajevo 2000: the psychosocial consequences of war. Results of empirical research from the territory of former Yugoslavia*. Sarajevo: UNICEF; Available from: http://www.psih.org.

Appendix. Directions for the interviewers (English translation of original Italian)

To the psychologists of SIPSiVi involved in the collection of case studies for the DRUID project (WP2.2 epidemiology).
Reference: Semi-structured interviews
Dear colleagues,
The work we are doing together is profoundly innovative. Examining the literature, we see a great deal of efforts to obtain this type of knowledge, but so far all the other results seem to be more limited by their similarity with the Police and insurance investigation, or at least by the atmosphere of the data collection, which fails to be confidential so as to support the human tragedy, which in our case leads to much greater confidentiality. If your clinical judgment evaluates the interviewee as not being sincere, do not collect that information.
In order to keep the confidential atmosphere, do not propose registration tools, nor schemes: the initiative must be left to the interviewee until he gets a stable feeling that **his healthy outlet is the primary objective of the contact**, and information useful to prevent other accidents comes only second. As a matter of fact, all his impressions linked to the accident are not only useful to him as an outlet, but also precious when transcribed in order to be classified and analysed. This second objective is by no means incompatible with the first, therefore **the confidential atmosphere is not wasted by asking some questions later or, even better, in a second session**: this allows us to better complete the picture, in order to produce statistics that are not only more reliable than the official ones (this would already be a very important result) but also more complete, which is the optimum to prevent future accidents.
For this second objective it is important that each one of you keeps in mind the interests of the research, national as well as international, and particularly to the DRUID project, so that these interviews contain all the information useful to analyse the accident that are described.
We list below the elements that should not be missing in any account and, if you see they are missing in the first transcription, it would be good to search for them with new questions, even in a subsequent session, either to the original person or to another aware of the same accident.
We should never forget that the focus of our research is on the accident: any accident having been at least minimally traumatic, even only psychologically. Your work will be paid on the basis of **the number of the accidents that appear analysable**. Even though the description of a driver who caused more than one accident must remain unique, in order to **evaluate connections and frequencies**, **each accident deserves all our analyses**.
Our participation in DRUID WP2.2 will continue until we are able analyse at least 100 accidents caused by driving under the influence of drugs or psychotropic medicines. Alcohol alone has already been studied enough, while it is useful to know more about its combination with drugs and medicines. The research will evaluate the relative weight of these various substances on the basis of objective data, but also the **subjective evaluations by the involved persons** on the different effects of the various substances are valuable: try to collect them too.
As a plot of these semi-structured interviews, let's recall below the questions typically interesting for the research.
First, we must have the **general characteristics of the driver who caused the accident**:

- Male or female
- Age at the moment of the accident; it is not necessary to report their age; it is enough to record the age-group: up to 18, from 19 to 25, from 26 to 35, from 36 to 47, from 48 to 59, 60 and more;
- Marital status is not important in the bureaucratic sense, but in the human sense: whether the person is single or has a stable relationship with one or more other persons;

- Nationality; this too is not intended in a bureaucratic sense, but a practical sense: if the person originates from another country, please evaluate if the language and culture is still preserved enough to classify the person as pertaining to that nationality instead of as being Italian, regardless of actual citizenship, which is also useful to note at least in situations of secrecy. This cultural aspect is more important than the record, as we did in SARTRE, the size of the city of residence, we also ignore (in order not to become too onerous) the kind of job, as detailed in other sociological researches. We will see later that instead we are interested if the journey was for work or other reasons;

Second, always focusing on the driver who caused the accident, it is useful to know the **life-style in the period of the accident, independently of driving**:

- Whether he used drugs used, and in this case specify if cannabis or harder drugs: cocaine, heroin, methadone, other drugs - please specify if possible;
- Whether he took psychotropic medicines - specify which ones;
- Whether alcohol was consumed in a moderate quantity (below the limits allowed for drive) or in higher quantity, above those limits;
- Whether alcohol was combined with other substances, with cannabis, with other harder drugs: cocaine, heroin, methadone, other drugs, always specified if possible; if alcohol was combined with psychotropic medicines; if other combinations were used, even in that case it would be good to specify;
- Which were the preferred transport modes; public, automobile, motorised two wheels, bicycle, walking, other;
- Which were the primary transport modes actually used, coded as above.

It is also useful to know the permanence of the described lifestyle, e.g. less or more than one year.

All these characteristics of the lifestyle should be distinguished from the **driving style** at the same period of the accident:

- Whether this driver was **used to Driving Under the Influence – DUI –** of drugs, specified as above: cannabis, harder drugs (cocaine, heroin, methadone, other drugs, specified if possible);
- Whether he used to DUI of psychotropic medicines, specified
- Whether he used to DUI of alcohol, in a moderate quantity (below the limits allowed for drive) or in higher quantities, exceeding the permitted limits;
- Whether he was used to DUI of alcohol combined with other substances, with cannabis, with other harder drugs: cocaine, heroin, methadone, other drugs, always specified if possible; if alcohol was combined with psychotropic medicines; if the driver was used to DUI of other combinations, and even in that case it would be good to specify what was used;
- Whether he used to drive with other misbehaviour: handling the cell-phone, the radio, while being physically intimate with a passenger or engaging in aggressive confrontations; whether he used to drive with some free animal in the car, or smoking;
- Habits for the restraint systems, for the driver / for other passengers / for children.

Also for these characteristics of driving style it should be specified whether they were temporary (lasting less than a year) or stable (more than a year).

It is very important to know whether they were influenced by **sensitisation campaigns**, which ones, and at least which campaigns are remembered and what comments they have. As a consequence, it will be possible to understand which campaigns would be useful in order to prevent recurrence of that type of accident.

Other useful information, if present: has the driver participated in safe driving courses?

It is very important to **distinguish habitual behaviour** while driving, from the **behaviour that directly caused the accident**. The confidentiality of our contacts allows us to weigh, on one side, the impairment's negative effect and the tolerance of certain substances caused by regular use (difficult to evaluate in other ways) and, on the other side, the growth of risk due to recurrence (also difficult to evaluate without confidentiality). One way to weigh the relative strength of the two conflicting pressures is certainly the **frequency of the accidents**, always in the analysed period: it is important to know how many month separate that accident from another caused by the same driver; at least it is useful to know whether the chronological distance is more or less than a year, and how many years that driving style existed, or simply **for how many years the driver kept a similar frequency of accidents**.

Subsequently, independently from the driving style, the **accident's direct causes** should be described:

- Direct influence of drugs, as above specified
- Active influence of psychotropic medicines, specified
- Active influence of alcohol
- Active influence of combinations as specified above
- Whether the driver was actively risk seeking (e.g. speeding) or if this behaviour was absent
- Whether the restraint systems were fastened or not; specify also in case of children front/rear seats;
- Whether the driver had other negative conditioning: fatigue, sleepiness, whether fallen asleep while driving; if not wearing adequate corrections of visual deficits; diabetic crisis; or simply if the driver was insufficiently experienced, therefore clumsy;
- Whether the accident has been caused by other incorrect behaviours: handling the cell-phone, the radio, while being physically intimate with a passenger or engaging in aggressive confrontations; whether he used to drive with some free animal in the car, or smoking;
- Whether the accident has been influenced by adverse weather conditions: fog, rain, snow, ice, wind;
- Whether the infrastructure had some importance, if the road layout was not self-explanatory, or signage was inadequate or confusing;
- Whether the vehicle caused problems due to bald tires, burst tires, brakes, other mechanic problems;
- Whether to Police failed to prevent their driving, after having had this opportunity.

It could be useful to try a percent evaluation of the relative weight of the various causes, if concomitant. The confidential sincerity frequently permits to **the same driver who caused the accident to evaluate** its causes even more correctly than the official sources. It can seldom be useful that **the interviewer corrects the evaluation of the driver** when clearly diminishing the real weight of a cause, and in this case the difference must be noted, in order to derive indications for the sensitization campaigns or the interventions to improve and rehabilitate the drivers.

All these actual causes of the accident must be compared with the causes that have been recorded in the **official records of the same accident**. This comparison gives our research a much higher value than it would have if it were only limited to the actual causes - much more striking. Therefore these data must be collected very carefully and specifically, though apparently corresponding to the previous classification. Before indicating the cause(s)

possibly ignored by the official registration, it is necessary to indicate whether the accident as a whole

- has been completely and correctly recorded
- has not been recorded at all.

From the first interviews received so far, the first case almost never occurs, while the second is impressively frequent. This fact already gives value to our research, deserving to be refined with the precise indication of which effective causes have been ignored when the accident has been recorded but only partially, and sometimes even in a different manner between the Police and the insurance company.

Each accident must however be defined by some **other characteristics**, even when they are not directly causative:

- period of the week, specifying the day if possible, not only distinguishing the weekend from the rest of the week;
- circadian period: morning (from 7 to 13,59), first afternoon (from 14 to 16,59), second afternoon (from 17 to 19,59) evening (from 19 to 24), night (from 24 to 6,59)
- type of road: urban, country, motorway, other
- means of transport driven by the driver who caused the accident: car, motorcycle, taxi, minibus, bus, lorry, other means of transport
- purpose and nature of the trip: from home to work (or school) and from work (or school) to home (they can be different, e.g. because of fatigue); on the job (professional) for shopping, for holidays, for leisure, other reasons.

When all these elements have been collected, it becomes possible to derive from their knowledge which would be the **most appropriate measures to prevent** that specific type of accident:

- awareness campaigns, addressed to drivers, on specific issues that the previous analysis has demonstrated to be ignored, under-estimated, or misunderstood by the same drivers;
- campaigns, and also training, for the agents of the various Police bodies, and maybe also to judges, on the issues that we have seen escaping detection and suppression.
- campaigns, as well as training, addressed to administrators responsible for the management of infrastructure and signage, commensurate with the relative effect each specific problem had on the accidents; from the interviews received so far this type of deficiency was not proportionate to the large share of funding that they take from other interventions, which would be more useful for road safety.

Finally, from the evidence collected we may derive the **indication for interventions** of improvement and rehabilitation of the same driver who caused the accident, distinguishing between information courses, when the mistake derived from ignorance, on one hand and, on the other, driver improvement and rehabilitation courses, when the change needed is not merely informative, as implemented in many countries already. This research can therefore import such good practices also to Italy. Another indication could be for restorative justice that in a country such as Italy assumes a particular importance and deserves to be done on a sound basis, on a serious basis.

From the first accounts received, it appears that the most informative interviewees are the drivers themselves who caused the accidents. In these cases it may be useful to add some comments below on possible biases as determined by the interviewer.

In order to send the files:
Before the description of each accident, insert as a cover the completed template of the Confidential Interview Questionnaire – DRUID 2006/2010.
Never report names nor any reference to precise locations, nor other personal elements related to the driver;
Please number each accident by the initials of your own name and surname followed by the consecutive number of the driver and the accident, e.g. X.Y.1.1 (driver 1, accident 1), X.Y. (driver 2, accident 1). If for the same driver more than one accident is reported, please number X.Y. 1.1 (driver 1, accident 1), X.Y (driver 1, accident 2.).
Send all files by email only.