

A comparative analysis of drink-driving accidents in Southern European countries

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Abstract

This paper is aimed at the examination of the drinking & driving problem as demonstrated in terms of the European Programme SUNflower+6. Focus is placed on the Southern countries group (Greece – Portugal – Spain/Catalonia). The analysis comprises three components: official countermeasures (legal offence definitions, police powers to detect offenders and sanctions imposed). Sanctions also imply general treatment of drinking drivers. The evolution of both official regulations and enforcement reflects social conditions and attitudes in favour of or discouraging measures to deal with the problem. The extent of the examined problem is approached through available statistics of appropriate indicators. Such data involve proportion of fatal accidents with presence of drivers exceeding alcohol level limits, proportion of killed drivers over limit, etc. Results of special studies served as supplementary sources of information. Common success or failure factors were identified, yielding some insight on further action that should be taken to better address various folds of drink driving. Enforcement intensification appears promising, but some rationalisation of police checks should be considered. Associated suggestions may be incorporated in a general road safety programme framework, capable of suiting varying requirements to deal for instance with novice drivers, repeating offenders etc.

1. Introduction

Drink driving constitutes one of the primary road accident causes. This statement is verified by data coming from most European countries, where alcohol influence appears to be present in approximately a quarter (25%) of all fatal accidents. This proportion also holds in terms of fatalities, either at the level of drivers or including all participants, i.e. occupants and pedestrians. Considering that in most EU countries random (preventative) alcohol tests indicate that 1-4% of the total drivers' population is found over limit [1].

The objective of this work involves the comparative analysis of three countries plus an autonomous territory in Southern (Mediterranean) Europe on the issue of drinking & driving, as examined in terms of the road safety research programme SUNflower+6 [2]. These regions are Greece, Portugal, Spain and Catalonia.

2. Understanding of the problem and related countermeasures

According to the footprint methodology developed on the course of the aforementioned programme, it is of great importance to capture the – often hidden – relationship between mentality of society overall and decision makers alone (as input), on one hand, and the produced road safety programmes / measures on the other (as output) [3]. In case studies such as drink driving, excessive speeding or seat belt use, this is enhanced by the availability of accident statistics in the form of Safety Performance Indicators (SPI).

2.1 SARTRE survey as a means of self-reported behaviour

According to the findings of the SARTRE 2 project in 1997, Portuguese drivers show a rather restrained self-reporting of driving under alcohol influence. In a question on having driven for at least one day over the last week, being probably over limit, positive responses reached 3.7% (EU average at 3.8%). The respective figures for Spaniards and Greeks were 5.0% and 13.1%. These values provide some idea on the realization of the problem from each country. The interpretation of those results is relatively simple: drivers usually tend to under-report drinking and driving.

Portuguese drivers also demonstrated a more extended perception of some danger to be tested. When asked on the probability to be tested on a typical trip, they yielded positive responses in 16.1%. Positive answers with respect to the estimated likelihood to be tested on a typical journey, touched in Spain 10%, while in Greece they only came up to 5.5%. This implies that by the time of the project Iberians had already experienced frequent tests and they were somewhat more familiar with this measure. On the contrary, in Greece it is only lately that the actual detection risk has increased enough to cause some deterrent effect.

The results of SARTRE 3 surveys (4, 2004) illustrate some resemblance between the examined regions, implying that the specific grouping adopted should be quite suitable for further analysis. Responses from the selected sample reveal that in Greece 16% of asked drivers had been tested at least once in the previous 3 years. The respective proportions were slightly higher for Portugal and Spain, namely 18% and 20%. All these values are slightly higher than the EU-25 average, to an extent because the particular problem remains severe in Mediterranean countries.

2.2 Official countermeasures to deal with drinking & driving

It can generally be said that Southern countries considerably lag behind SUN countries realizing the problem of drinking & driving and organizing a properly structured system to deal with it.

Interestingly, Portugal was the first to set a reasonable Blood Alcohol Concentration (BAC) limit of 0.5 g/l in 1990, followed by the other territories in 1999. Portugal and Greece also have an intermediate limit, set at 0.8 g/l of blood, as well as a high limit (1.2 and 1.1 g/l respectively). In the case of Spain and Catalonia there is no upper limit established by law, but a limit of 1.0 g/l of blood is used to determine and process the most severe infractions.

The evolution of lower limit thresholds is rather interesting. In Spain and Catalonia a reasonable reduction from 0.8 to 0.5 g/l was decided in 1998 and applied in 1999. In Portugal, an experimental phase was recorded between 2001 and 2002 with a lower limit at 0.2 g/l. It is to say that the previous threshold of 0.5 g/l was put again in force. Greece only set a stricter low limit of 0.2 g/l for young and professional drivers in 2002, although the problem of drink driving among young drivers had been extremely acute for a long time. Such developments constitute implications on the difficulties encountered often with respect to social acceptance. People are not always prepared to accept major changes of that nature, no matter if the proposed measures are supposed to promote level of life eventually. They also suggest that administrative procedures are more often than not lengthy and prohibit fast implementation.

Table 1. *Official countermeasures in the Southern Group countries (2004)*

	Portugal	Greece	Spain/Catalonia
Low limit	1990: 0.5 g/l (blood) 2001: 0.2 g/l 2002: 0.5 g/l	1999: 0.5g/l (blood) (0.2g/l for novice drivers) 2001: 0.25mg/l (breath)	1999: 0.5g/l (blood)
Detection	Screening: Random + accidents Evidential breath testing	Screening: Random + accidents Evidential breath testing	Screening: Random, suspicion, violation + accidents Evidential breath testing
Minimum sanction	Fine (€240 - 1200), 1-12 months disqualification	Fine (€166)	Fine (€302)
Intermediate limit	0.8 g/l (blood)	0.08% (blood) 0.04% (breath)	
Minimum sanction	Fine (€360 - 1800), 2-24 months disqualification	Fine (€334), 3 months disqualification	
High limit	1.2 g/l (blood)	1.1g/l (blood) 0.6mg/l (breath)	1.0g/l (blood)
Minimum sanction	Fine (up to €2500), 3-36 months disqualification + prison (up to 12 months)	Fine (€624), 6 months disqualification + prison (at least 2 months)	

Portugal applies the stricter sanctions overall, followed by Catalonia. Greece appeared to apply the mildest sanctions, although differences with Spain / Catalonia are rather small. The systems of all investigated countries reveal similar design principles and variations mostly regard amount of fines or length of disqualification periods. It is noted that in Portugal, Spain and Catalonia all drinking drivers are disqualified from driving for a period of at least one (1) month. On the contrary, in Greece this only applied to drivers caught driving with a BAC exceeding 0.8 g/l.

The new Road Traffic Code (RTC) of Greece was introduced in 2007 and prescribes considerably stricter sanctions for offenders caught driving under alcohol influence. In particular, the fines prescribed for the three ranges of BAC level have been raised to €200, 700 and 1200 respectively, whereas the vehicle is suspended at site and kept away. Offenders who are caught within two (2) years from their previous offence exceeding the high limit, face 6-month imprisonment, along with a €2000 fine and licence suspension for 5 years [5].

3. Evolution and special characteristics of the problem

There are not sufficient time series data related to drinking & driving in the Southern countries. This leads to a search of suitable methods and selection of proper tools to utilize available data. It generally appears that the contribution of drinking & driving to road traffic accidents has remained more or less stable in the examined countries. This is illustrated in all countries statistics, although fatal accidents are dealt with alone only in Greece and Portugal –with a suspicion of underreporting for the latter. In absolute terms the severity of the problem has started to diminish, at a relatively slow pace though –similarly to the trend of total accidents.

The fact that there is small relative improvement in drinking & driving as part of the total road accidents problem suggests that Southern countries have been rather late realizing and dealing with it, compared to SUN countries. The latter have already experienced response to a series of organized measures to confront the problem. Another good reason why the share of drinking & driving has not declined noticeably in Southern countries, although absolute values decrease, could be the fact that all other major accident causes used to contribute many accidents. Therefore, it has been equally easy to come up with some first measures of limiting their impact.

3.1 Extent of the drinking & driving problem

Drink and driving remains undoubtedly a severe problem for Southern countries. Considering limitations in data accuracy, it is estimated that approximately 1800 persons were killed in the three countries in year 2003 due to this cause. Data availability remains limited, although it is compulsory to have drivers blood-tested by the Police in fatal accidents. The comparison remains reliable, considering toxicology tests performed on killed drivers in each country. The proportion of positive tests is close to 32-33% in all three countries for the past few years, exceeding the expected upper value of 25% for the EU according to the report of the Euro Care study in 2003 [6]. One may conclude that the problem is severe and of similar scale in all examined areas.

Greece shows some improvement, as the proportion of fatal accidents with drivers involved who were found over the Blood Alcohol Limit (BAC) limit of 0.5 gram/lit has decreased from an average share of 32.5% for the period 1991-1995 to 27.2% during 1996-2001 and 22.4% in 2003, still slightly higher than the upper limit anticipated by Euro Care (20%). This is certainly attributed to an extent to the notable intensification of enforcement since 1998, with tests increasing six-fold within 5 years. In 2003 over 1.2 million checks were performed (about 1 for every 3 cars), approaching in fact relevant EC recommendations (1 check per 2.5 cars).

The number of fatalities that may be related to alcohol in Greece is estimated at about 600 persons around 1996, decreasing to 500 in 2001 and –rapidly- to 350 in 2003-04 (about 22% of total). Not having similar information for the other territories, it may be claimed that an indirect estimate is adopted as appropriate means of analysis. In particular:

1. In Portugal 27% of killed drivers were over limit in year 2002 (27.8% in 2005). Compared to 32% in Greece, the fatalities in question should be about 20% of the total, i.e. (2003) around 300.
2. For Spain, in a similar fashion, 32% of killed drivers appear to be over limit (29.5% in 2005). Applying again a 20% factor to total road accident fatalities yields about 1050-1100.
3. For Catalonia, the same procedure as for Spain leads to 150 alcohol-related fatalities –also 32% of tested drivers' fatalities over limit.

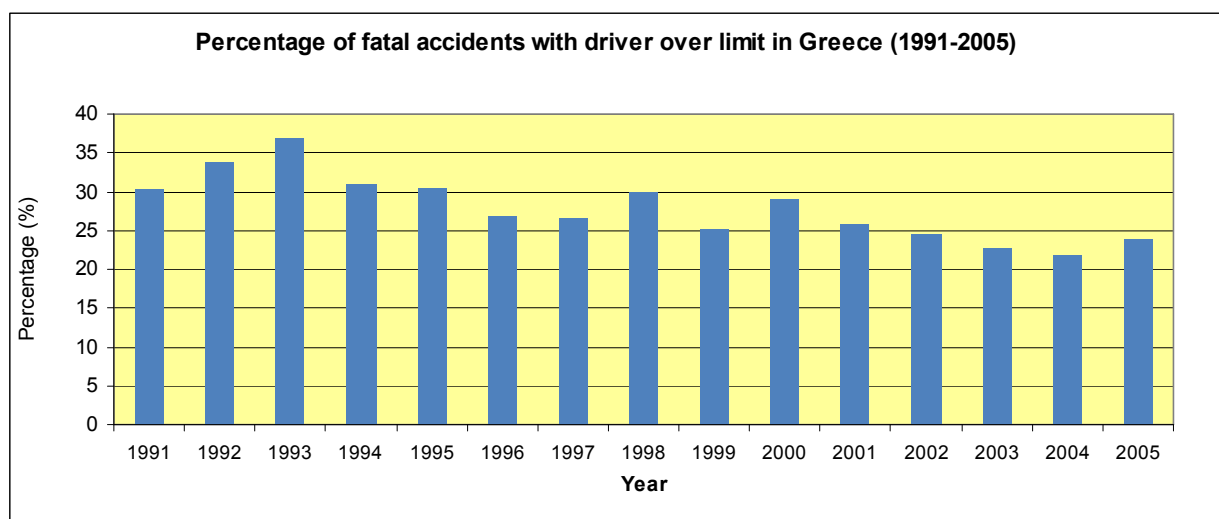


Figure 1. Percentage of fatal accidents with driver over limit (0.05%) in Greece (1991-2005)

Moreover, in Greece it is also a 32% of tested killed drivers that were found over limit. Transferring the analogy of the two proportions (22%, 32%) from Greece to the other territories is reasonable, because it is very similar to the expectations of EuroCare (2003) –suggesting upper limits of 20% for fatal – serious injuries and 25% for driver fatalities.

Concluding, the actual number for all examined territories should be close to 1800-1850. This figure represents about 21-22% of the overall road accident related fatalities.

As for the relative performance, it seems that Portugal perceived earlier than the others the severity of the problem and responded by prescribing stricter and more comprehensive sanctions, and enforcing their application as well. Meanwhile, Greece kept suffering a lot of casualties and took some action to alleviate this problem. There is steep enforcement intensification, accompanied by encouraging results within just a few years. This cultivates further expectations, but legislation (sanctions, etc) should become stricter. Spain (and Catalonia) is at a relatively stable state, but this does not mean that no effort is put.

3.2 Drinking & driving as part of the total road accidents problem

There have been significant recent efforts to come up with some indication of each country's performance in drink-drive related (fatal) accidents compared to all other causes. This constitutes a rather difficult attempt, since appropriate data is scarce. According to a most relevant report of ETSC [7], in the enlarged EU-27 some Central European countries exhibit notable progress.

Table 2. *Trend of alcohol-related fatalities compared to total fatalities (EU-27, 2005)*

Country	Average yearly (%) reduction in road deaths	Average yearly (%) reduction in deaths related to drink driving	Average yearly (%) reduction in deaths not related to drink driving	Yearly (%) change in deaths related to drink driving relative to change in other deaths
Czech Rep.	1.97	12.14	0.92	11.33
Germany	4.94	10.43	4.54	6.17
Poland	2.95	7.00	2.40	4.72
Slovakia	2.41	5.96	1.87	4.17
Netherlands	5.06	8.30	4.35	4.13
Latvia	4.00	6.47	3.20	3.39
France	5.88	7.34	5.23	2.23
Austria	3.62	5.61	3.48	2.20
Greece	3.18	3.57	3.14	0.44
Lithuania	-1.71	-1.88	-1.68	-0.19
Switzerland	4.68	3.91	4.85	-0.99
Denmark	5.04	4.26	5.26	-1.06
Estonia	5.18	3.66	5.73	-2.20
Great Britain	1.24	-0.69	1.59	-2.32
Finland	1.10	-1.24	1.73	-3.01
Slovenia	3.80	1.72	4.66	-3.09
Hungary	0.93	-2.21	1.19	-3.45
Spain	3.17	-0.93	3.75	-4.86
Europe 14	3.56	5.64	3.10	2.63

3.3 Special considerations

Data availability constitutes a major concern with respect to drinking & driving. The fact that in Portugal no realistic estimate of the proportion of fatal accidents with driver over limit may be provided serves as example, while data are not adequately disaggregated in Spain and Catalonia (presence of drivers over limit is only available for all accidents with casualties). Due to lack of resources and technical difficulty to have tests under any conditions, as well as because of data storage discrepancies, BAC level is only available for about one third of total killed drivers.

Table 3. Total annual alcohol tests in Southern European countries (1998-2003)

Greece	1998	1999	2000	2001	2002	2003
Performed alcohol tests	202,161	246,611	365,388	710,998	1,034,502	1,271,217
Positive tests	13,996	17,665	30,507	49,464	48,947	45,546
% Positive	6.90%	7.20%	8.30%	7.00%	4.70%	3.60%
Portugal	1998	1999	2000	2001	2002	2003
Performed alcohol tests	853,671	917,386	906,324	996,205	906,471	-
Positive tests	19,099	25,115	23,148	26,236	29,205	-
% Positive	2.20%	2.70%	2.60%	2.60%	3.20%	-
Spain	1998	1999	2000	2001	2002	2003
Performed alcohol tests	1,624,000	1,935,000	1,752,000	1,809,000	1,895,000	2,063,683
Positive tests	56,840	77,400	87,600	90,450	90,960	82,547
% positive	3.50%	4.00%	5.00%	5.00%	4.80%	4.00%
Performed alcohol tests (accidents)	70,000	77,000	72,000	70,000	74,000	89,006
% Positive (accidents)	6.40%	6.30%	7.10%	7.70%	6.90%	6.10%
Catalonia	1998	1999	2000	2001	2002	2003
Performed alcohol tests	-	-	-	340,057	366,039	421,396
Positive tests	-	-	-	22,407	21,244	18,726
% Positive	-	-	-	6.60%	5.80%	4.40%

According to a report of the on-going EU FP6 project SafetyNet on SPI [8], some countries exhibit much better data storage (e.g. in France the BAC level of drivers is known for about 88% of the 4857 fatal accidents recorded in 2005). Another important issue is data usability, given the expressions that are considered most useful. Although the ideal indicator is the percentage of fatalities resulting from accident with at least one impaired driver, the proportion of killed drivers is often used instead. It should be noted that this calculation regularly yields higher values, since alcohol-impaired drivers are over-represented in single-vehicle accidents. Furthermore, the fact that certain countries fall much lower than the anticipated range indicated by neighbouring and similar ones implies that no uniform definitions are applied. This should be further examined.

4. Evaluation of countermeasures – Discussion

All territories find themselves in a rather similar situation, suffering proportionally equal fatalities. It may be that Greece has made some more progress lately, but this is compensated by the fact that it lagged behind until recently. It is interesting to note some special temporal and spatial issues that appear to intervene in the drinking & driving problem.

4.1 Temporal and spatial issues within enforcement practice

It is generally accepted that drink driving is more frequent during the nighttime. There have been certain studies revealing this feature. Figure 2 presents a comparison of the hours of the day when preventative controls realized by the police under direct control of SCT (“Mossos”) are carried out, with the incidences of positive test results (Catalonia, 2003) [3].

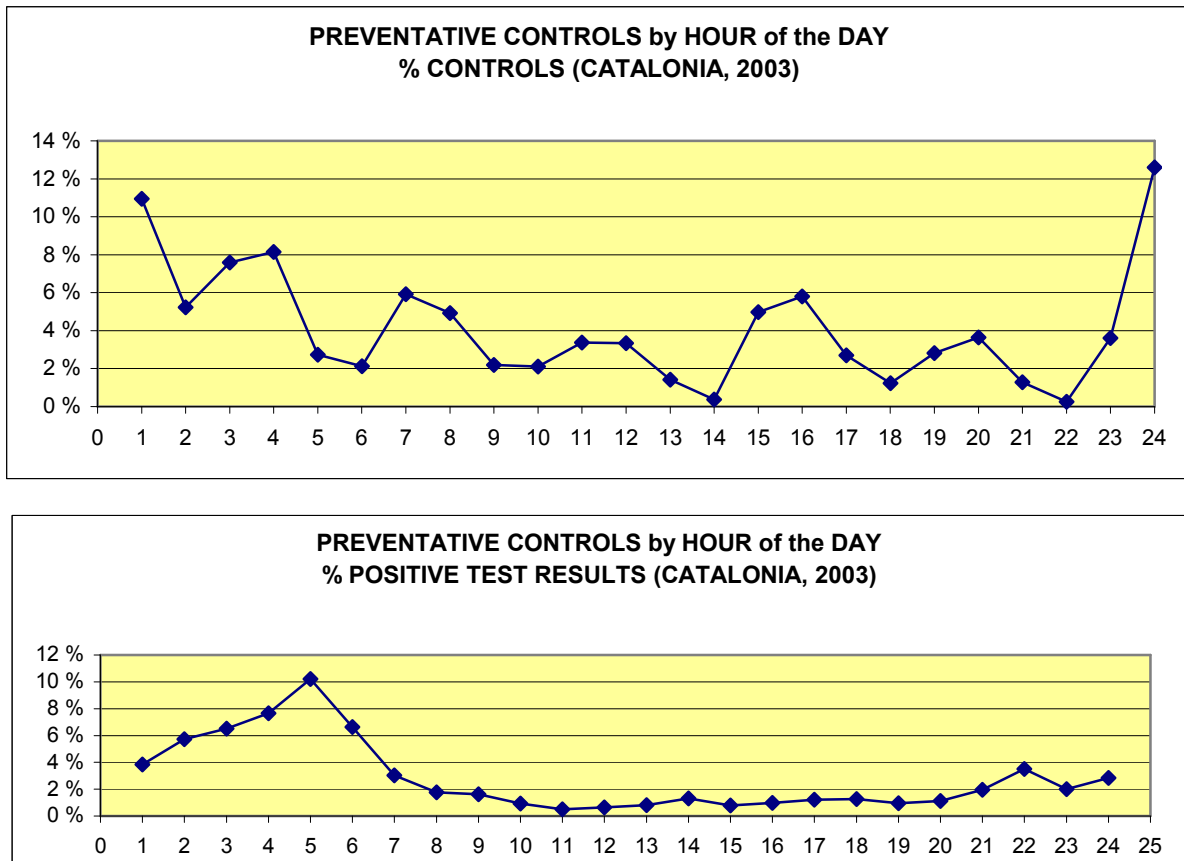


Figure 2. Proportion of tests by SCT police and positive results by hour of the day for 2003

According to recent research work conducted on the efficiency of alcohol tests in Greece, it appears that there is notable differentiation in the effectiveness of alcohol tests, depending on the urbanization and overall economic activity of each examined region [9]. It was also concluded that the deterrent effect posed by enforcement on drivers varies according to certain features.

The analysis involved multilevel models and utilized data from the period 1998-2002. It was shown that less urbanized and more road safety compliant regions are an easy target for enforcement. On the contrary, a more systematic effort would be required to achieve a significant effect in the more urbanized and – consequently – less road safety compliant regions (offenders may believe that they can better escape controls in areas of more dense traffic and population).

4.2 Future perspective

The preceding analysis yields a number of conclusions, which may help to form a suitable policy to alleviate the examined problem in the Southern group territories. In Portugal, it appears that almost 300 persons are lost each year because of drinking and driving, while the extent to which BAC tests results are not stored cannot be obtained.

In Greece, according to 2003 data, almost 340 persons lost their life in accidents with at least one drinking driver. This constitutes a saving of about 230 lives compared to 1996 (estimate for 570 persons). A declining share of drinking and driving in all road traffic fatalities is illustrated, along with a general improvement in the country. This implies significant effect of drink-drive policies applied lately, mostly in the shape of campaigns and intensified enforcement by the police.

In Spain the estimate of the number of alcohol-related fatalities depends largely upon the source of data used. According to police control figures, the number could be as “low” as 200 or 250 lives lost per year. According to figures from toxicology analyses the number might exceed 1000. It is claimed that the real figure is probably around 1000, and it is clear that measures to reduce drink driving have a high potential for saving lives in Spain.

For Catalonia it is estimated that alcohol related fatalities are approximately 210-225, accounting for almost 30% of the total. There is no adequate information to estimate the progress realized in this issue over time, but assuming similarly to the Greek case that this proportion is more or less constant for some years, it could be that the saving in question has reached 30-40 fatalities in the past 5-6 years. Total road accidents fatalities follow a steadily decreasing trend, implying that there is great potential to go lower than 200 drinking and driving fatalities in the near future.

5. Conclusions

Driving under the influence of alcohol remains a serious problem for the examined Southern European territories, despite encouraging trends. The presence of drinking and driving in all fatal accidents in Greece has decreased from an average share of 32.5% for the period 1991-1995 to 27.2% during 1996-2001 and 23.3% between 2002-2005, still slightly higher than the upper limit of 20% anticipated by EuroCare in the findings of a recent (2003) report for EU.

The situation is similar with respect to the toxicology tests performed on killed drivers in all examined territories. The proportion of positive tests is between 28-32% for the past few years, also exceeding EuroCare recommendation (expected upper value of 25% in EU). The proportion is calculated on the number of tests with known results, showing deficiencies in the information storage system, at two levels; first, tests are performed on about 80% of fatalities; second, data are registered successfully only in about 40% of these tests.

The legislative framework includes a basic threshold of 0.5 g/l of blood (lower BAC limit), or equivalently 0.25 mg/l of air (breath test – BrAC limit). Since 2002 this limit is stricter for novice and professional drivers (0.2 g/l). In Portugal and Greece there are also intermediate (0.8 g/l) and higher levels set (1.1 g/l) corresponding to different levels of sanctions. Violation of the lower limit only leads to a fine, while the driving licence is suspended for a certain period of time above higher limits. Drinking and driving is also penalized according to the points demerit system in power currently, but regulations that prevent recidivism are not adequate.

As an overall remark regarding sanctions, Portugal exhibits a more complete and comprehensive framework, showing earlier understanding of alcohol influence as a factor that causes severe accidents –although no lower limits are prescribed for novice and professional drivers. The Greek Road Traffic Code was recently reformed to greatly account for deficiencies of the past. A general conclusion is that specific measures are needed to address recidivism to an extent.

It is estimated that in the 4 examined territories the total number of fatalities attributable to alcohol influence should range between 1700-1900, an unacceptably large figure. There has been notable progress, but the general image remains moderate. It is indicative that the average proportion of positive alcohol tests (4% of total) corresponds to the peak that is observed in Netherlands during Saturday night (respective annual average: 1%).

Drinking and driving is the field where the Greek police have demonstrated the greatest progress in enforcement. The annual number of tests performed has increased from 0.2 million in 1998 to 1.27 million in 2003. The achieved rate of 1 test per 3 cars actually tends to approach EC recommendations (1 check per 2.5 cars). This may be associated to the decreasing trend in the proportion of drivers found positive in preventative screening tests (from 7.2% in 1999 to 3.6% in 2003). This performance is, at least, for the first time lower than the upper limit of 5% mentioned in EuroCare findings; but it remains close to that, placing the country at the bottom of EU. Moreover, informative campaigns are more frequently organized aiming at the stimulation of common attitude against drinking & driving (BOB campaign etc).

The right of the traffic police to perform checks under any circumstances is by now acceptable by society. Apparently, there is potential for further reduction of alcohol related fatalities. This depends partly on the willingness of society to accept further measures, already proposed by EC, such as the setting of a standard BAC level of 0.2 g/l for motorcyclists, or the establishment of a common minimum punishment of unconditional suspension of the driving licence for 6 months for anyone passing the limit. The acceptance of those is expected to vary, at least as far as the time horizon of application is concerned.

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