The attitude and behaviour of European car drivers to road safety
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SARTRE 2 reports
Part 2
Report on in-depth analyses

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Preface

In 1989, researchers from different road safety institutes in Europe started a consortium to explore car drivers’ attitudes to road safety: SARTRE, Social Attitudes to Road Traffic Risk in Europe.

The initiative was taken by Timothy Benjamin, IDBRA, Pierre Barjonet, INRETS, and Charles Downing, TRRL, soon supported by Jean-Pierre Cauzard, INRETS, Allan Quimby, TRL, Ingo Pfafferott, BASt and Roelof Wittink, SWOV.

When the survey started, 15 countries participated, each represented by a research institute or road safety organisation. The members organised the budget by themselves, in most cases the ministry of Transport financed the cost for the country. Later, European commission contributed with 10%, and the newly created FERSI, Forum of European Road Safety Research Institutes, supported the project.

In 1995, INRETS took the initiative for a second survey. A request to EU commission to support the survey in EU member states by 50% was honoured. FERSI gave to the project again full support. All EU countries except one are participating again and some other countries joined the consortium.

Three reports represent the analyses of the results of the second SARTRE survey:

Part 1: Report on principal results

Part 2: Report on in-depth analyses

Part 3: Executive summary - Synthèse
Table of content

Chapter 1 Changes between SARTRE 1 and 2
1.1 Analysis of the changes in general 6
1.2 Analysis of the changes about drivers attitudes and behaviours for each country 23
1.3 Conclusions 43
References 46

Chapter 2 European car drivers’ opinions and norms about road safety measures
and in-car devices 47
2.1 Introduction 47
2.2 Method 48
2.3 Results 50
2.4 General discussion 64
References 67

Chapter 3 How can this happen? - Drivers exceed speed limits! 69
3.1 Introduction 69
3.2 The method and the selection of variables 69
3.3 Results of modelling 71
3.4 Conclusions 82
Annex: 84

Chapter 4 The main areas for road safety measures: alcohol, seat belts and speed 85
4.1 Methodology 85
4.2 Factors which underlie reactions in relation to the three major areas for measures 88
4.3 The characteristics of drivers 90
4.4 Mobility indicators and the main road safety measures 91
4.5 Harmonisation at European level 92
4.6 International differences regarding the main road safety measures 92
4.7 Regional differences 94
4.8 Concerns about social problems and the rules 99
4.9 Conclusions 99

Annex 101

Participation to the SARTRE 2 project: 101
Questionnaire SARTRE 2 103
Chapter 1  Changes between SARTRE 1 and 2

Analysis of a Europe which is on the move, which travels by road, and whose ideas and behaviour are both changing, particularly as regards road risk and the desire to reduce it.

This analysis is based on data from the part of the two phases of the SARTRE project which was used in all countries. Both surveys were conducted with the same methodological rules. The reference questionnaire for the second phase was smaller than for the first, but most of the questions it contained were similar to the first.

Fifteen countries took part in the two surveys. For the present analysis, we decided to analyse separately the changes in the two parts of Germany and also in the Czech and Slovak regions of the former Czechoslovakia corresponding with the current republics.

We have first of all analysed the overall structure of the samples in order to identify how the main criteria, which define the samples, have changed. This should allow us to identify stable aspects or moderate changes and greater, or even excessive, variations.

The latter, which were already anticipated from the existing assessment of the conduct of the survey and the raw results (see report on the principal results), should allow us to identify the samples which are slightly contentious and for which a degree of caution is necessary when interpreting the results. A detailed assessment will be drawn up for each of the countries involved.

Using this socio-demographic structure as a basis for interpretation, we shall draw up an account of change in opinion and behaviour between SARTRE 1 and SARTRE 2, that is to say between 1991-92 and 1996-97.

We shall observe change in attitudes towards social problems, as regards:

- the efforts which governments are expected to make to reinforce road safety measures,
- the factors which can cause road accidents,
- drivers' own driving behaviour and that of other drivers,
- speed limits on roads,
- behaviour with respect to other road users,
- the wearing of seat belts,
- drink-driving,
- measures taken within a context of European harmonisation,
- hazardous activities, and awareness of danger.

Change in the attitudes of drivers between the two years will be described under a number of different headings.
1.1 Analysis of the changes in general

General overall socio-demographic change in the countries in the survey

From the socio-demographic standpoint, there are few general differences between the two survey years. It is nevertheless apparent that more of those interviewed for SARTRE 2 live in small towns of under 10,000 inhabitants (33% compared to 25% for SARTRE 1) and that they are relatively experienced drivers (34% of those interviewed for SARTRE 2 have been driving for over 25 years compared to 26% in the case of SARTRE 1).

In 1997, they are also slightly older, with lower mileage and most often low or moderate incomes. However, the differences in percentage terms between the two periods do not exceed 3 or 4%.

Apart from the above points, we can state that, as a whole, the sample of the persons questioned in the two surveys is socio demographically stable. This means that we are able to measure directly the change between the two years in the results for opinion questions.

Analysis of the socio-demographic structure

In order to discover the socio-demographic structure of SARTRE 1 and SARTRE 2 respondents, we conducted factorial analysis (multiple correspondence) of all the data for the two years.

This method has been explained elsewhere (see Cauzard in SARTRE 1995, Lebart et all 1984). We have applied a weighting to each country on the basis of a variable which corrects some sampling effects.

This analysis considers the following variables:

• gender
• age
• annual mileage
• marital status
• educational level
• the type of town lived in
• three classes of income (low, moderate, high)

In this list, besides classical variables, we excluded indication of occupational activity because of variation of definition across the countries, and we included the annual mileage as indicator of mobility, characteristic of a population of drivers.

From young persons living alone...to older persons who are married, divorced or separated

With reference to a first dimension (see Figure 1.1) which distinguishes between the drivers in the survey, we can detect a contrast between young persons under 25 years of age who live alone, and older persons, of 40-55 years of age, who are married, divorced or separated. Age and marital status are projected linearly on this first axis, apart from for widows and widowers.
From low annual mileage and low incomes ... to high incomes and high annual mileage

The second dimension contrasts firstly persons with low annual mileage (less than 5,000, 5,000 to 10,000 kilometres) with those with high annual mileage (over 20,000 kilometres) and secondly those with low incomes with those with high incomes. Respondents with low incomes tend to have low annual mileage and those with high incomes tend to have high annual mileage.

The specific behaviour of widows and widowers

Widows and widowers merit special attention. They are right at the bottom of the second dimension. They only account for 3% of the entire surveyed population but are extremely uniform as regards socio-demographic variables.

We can therefore state that the first dimension relates to ages of life whereas the second dimension is more a representation of the economic position of respondents. In addition, two diagonals are also apparent. The one with the positive gradient represents the urban/rural situation and the educational level, whereas the one with the negative gradient relates more to the sex of the respondents. Annual mileage appears between second dimension and second diagonal.

The following graph (see Figure 1.2) summarises these socio-demographic observations about European drivers.
Change between the two surveys in each country

In order to identify any change in socio-demographic structure between the two surveys we have positioned the variables for each country and each year on this factorial plane. We observed that most countries occupy a similar position in both years (see Figure 1.3). In this graph the respective positions of a same country are indicated by the mention S1 for SARTRE 1 and S2 for SARTRE 2.

The length and orientation of the line between the two points, which represent a country in SARTRE 1 and SARTRE 2, reveal the scale and meaning of these differences. If the line is parallel to axis 1, the observed differences are due more to changes in age structure and marital status. Conversely, if the straight line is parallel to axis 2, changes are more related to income and distances driven. In the direction of first diagonal changes are related to level of education and rural-urban context, whereas in the direction of second diagonal they are related mostly to sex of the drivers. The length of the line reflects the size of change. The sense of arrow gives time change from 91-92 to 96-97.

As an illustration, we find almost no change for French sample, increase in average annual mileage and income level for Dutch sample, marked decrease in proportion of young drivers for Italy, very large change for Hungary and Portugal.

More marked differences in demographic structure were nevertheless apparent in the case of the Netherlands, Portugal, Hungary, Slovakia, Belgium, Spain and Italy and need to be detailed.
Figure 1.3: Differences between the two periods, 1991-92 and 1996-97 (S1 to S2)

For Italy, Portugal and Slovakia, we can state that this difference is due to a sampling bias. For the first two, the cause of this is mostly shortcomings in the SARTRE 1 survey, whereas for Slovakia the number of persons living in urban areas was probably over-represented in SARTRE 2. In the case of Spain we can assume that the second survey was carried out "less seriously", but diagnosis of this problem is more difficult in the case of Belgium, the Netherlands and Hungary. We shall now analyse these differences further. The percentages for SARTRE 2, 96-97, are given before those of SARTRE 1, 91-92.

Spanish samples

The percentage of respondents with low incomes was higher in 1997 than in 1992 (22% for SARTRE 2 compared to 15% for SARTRE 1) as was the proportion who drive less than 5,000 kilometres (35% compared to 25%). In 1997 there were therefore more workers and retired persons (14% were workers compared to 7% and 8% were retired compared to 3%).

For SARTRE 2, three quarters of respondents stated they had the minimum compulsory insurance whereas the figure was only 43% for SARTRE 1. Finally there were slightly more two-person households in 1997 than in 1992 (16% compared to 9%).

| The Spanish drivers surveyed in 1997 have lower incomes, drive fewer kilometres and are more frequently workers and retired people than in 1992. It nevertheless seems that these differences are not too important as regards responses to the questions. |

Slovakian samples

In contrast to the Spanish, the Slovaks surveyed in 1997 have higher incomes: 43% have moderate income compared to 32%. There are thus more shopkeepers and heads of enterprises (6% compared to 0%), and more persons in the liberal professions (4% compared to 0%).
More of those interviewed for SARTRE 2 live in large towns (28% compared to 8% for SARTRE 1) or in the suburbs (11% compared to 3%). However, as in Spain, they often have the legal minimum insurance (62% of drivers compared to 33%).

Thus the Slovaks who were interviewed in 1997 have higher incomes, and more often live in large towns and suburbs. As with Spain, the differences do not seem very important.

Hungarian samples

More than half the Hungarians interviewed in 1997 have low incomes (71% compared to 23%). A quarter of them are over 55 years of age (compared to 9% in 1992). Three quarters of them are married (75% compared to 63%).

More of them have been educated to primary or secondary level (77% compared to 61%). The retired make up roughly a quarter of respondents in 1997 (21% compared to 7%), as do workers (27% compared to 12%).

Most of the interviewed drivers stated that they have the minimum compulsory insurance, which was less true in 1991 (82% compared to 60%). Slightly more people live in suburbs (17% compared to 7%).

Thus the Hungarians drivers surveyed in 1997 have both lower incomes and are older. They are more frequently workers or retired persons. The structural differences are quite large and should be taken into account when interpreting signs of change.

Belgian samples

The incomes of the Belgian drivers interviewed in 1997 are lower than in 1992: 29% had moderate incomes in 1997 compared to 6%, 56% have low incomes compared to 40%. There are slightly more retired persons (20% compared to 14%).

Slightly more of them live in small towns: 24% in towns with 10,000 inhabitants (compared to 12%). 11% live in cities with more than 100,000 inhabitants (compared to 6%).

What has changed the most between 1992 and 1997 is income. The SARTRE 2 respondents more frequently stated that their income was moderate or low. The observed differences are not very large.

Portuguese samples

More Portuguese drivers interviewed in 1997 have low incomes: 68% compared to 24%. In contradiction with this, there are more middle managers (20% compared to 6%) and fewer workers (16% compared to 29%). 21% are under 25 years of age (compared to 16%). At the same time, there are more unmarried persons (34% compared to 23%).

Their educational level is often higher: 34% have been in further education (compared to 10%). More women have been included in the survey: 36% for SARTRE 2 compared to 25% for SARTRE 1. Finally, the cars also have larger engine capacities.

The Portuguese drivers have lower incomes, are younger, more educated and more often middle managers in the second survey. To a large extent, this is due to an improvement in the quality of the sample. The observed differences are quite large and should be taken into account when interpreting indications of change.
Dutch samples

The persons interviewed in 1997 have higher incomes: 34% have high incomes compared to 2% in 1991. Consequently, there are more middle managers in 1997 (17% as opposed to 7%). More of them live in small towns: 33% compared to 24%. Finally, the engine capacities of the cars are larger: 14% are equal to or greater than 2000 cc compared to 7%.

For the Netherlands the two years differ as regards incomes. The 1997 respondents stated that they had higher incomes, but the observed differences are not very large.

Italian samples

More of the Italians interviewed in 1997 live in small towns or in the country. 21% live in towns with a population of less than 10,000 (compared to 0% in 1991). A quarter live in rural areas (26% compared to 9%).

Three quarters of the respondents are educated to primary or secondary level (75% compared to 33%). One- or two-person households are more frequent in 1997: 22% of respondents live in one-person households in 1997 compared to 7% in 1992 and 26% of respondents live in two-person households compared to 18% in 1992.

A little under half of SARTRE 2 respondents have moderate incomes (43% compared to 30%). On the other hand, the proportions of high and low incomes are lower in 1997 than 1992. More persons of intermediate age were interviewed in 1997. 37% of respondents were in the 25-39 year old age class in 1997 (compared to 31% in 1991) and 32% are in the 40-54 year old age class (compared to 27%). The engine capacities of the cars are also higher.

The Italian drivers interviewed in 1997 live more frequently in rural zones, more often have moderate incomes, are more often in the intermediate age group (between 25 and 54 years old) than in the first survey. Small households are more frequent. To a considerable extent, this is due to an improvement in the quality of the sample. The observed differences are quite large and should be taken into account when interpreting indications of change.

Change in opinions and behaviours

Next, all the opinion variables have been positioned as illustrative variables for all the countries in SARTRE 1 and SARTRE 2. For reasons of legibility, question numbers on the graphs identify categories of answer. If needed we can refer to the questionnaire for full question text (see annex in SARTRE, 1997).

Regarding social problems

As people grow older, they become more concerned about social problems.

As regards the variables which relate to general topics, it is apparent that the older people are, the more concerned they are by rising crime, road traffic accidents and the standard of health care (see Fig 1.4). Younger people, particularly those with the highest incomes and the highest mileage or who have been in further education do not seem to be concerned about any of the general topics.

Persons with low incomes are often more concerned about unemployment.

The oldest drivers (>= 55 years of age) do not seem at all concerned about unemployment. This can be explained by the fact that these persons are often retired or very near retirement.
Figure 1.4: Concern about risks

Figure 1.5: Government actions
However, the respondents who are the most concerned about unemployment are those who have the lowest incomes or who have been educated to just primary and secondary level or who live in rural zones. The issue of pollution, which is located in the centre of the graph, does not seem to interest one socio-demographic group more than others.

**Concerning government efforts to reinforce road safety measures**

The greater their annual mileage, the higher their income...the more opposed they are to governments reinforcing road safety measures.

The youngest and those with high incomes are opposed to increased enforcement of traffic laws by the government. In contrast, the older persons are in favour (see Fig 1.5).

The respondents who drive the greatest annual mileage and those who have the highest incomes are very much opposed to an increase in the number of road safety campaigns, to extending technical checks-ups to more vehicles or to improving the standard of roads. On the other hand, those who do not drive very much, or with low incomes, tend to agree with these measures.

**On various statements**

The higher their level of education and the more urban the areas they live in ... the more opposed they are to stiff penalties.

![Figure 1.6: Wishes about various questions](image-url)

On the other hand, persons who make little use of their car, with low incomes, are strongly in As with their opinions on the authorities, those with high annual mileage, or who have high incomes, or have been in further education, or who live in towns are opposed to the
punishment of road traffic offences being much more severe or forbidding motor vehicle manufacturers from stressing the speed of their vehicles in advertising (see Fig 1.6).

favour of these items. The oldest persons agree strongly that offences should be more severely punished and that manufacturers should not be allowed to produce advertising which is centred on speed.

**On the factors which can lead to road accidents**

*Figure 1.7: Cause of accident...drivers behaviour*

*For the oldest persons, following the vehicle in front very closely never causes an accident.*

Following the vehicle in front never causes accidents according to the oldest persons, whereas it can do so sometimes or rarely for the young.

*For the oldest persons, poor lighting can cause accidents.*

In contrast, respondents under 25 years of age think that poor lighting is never a cause of accidents, whereas those aged 55 and over answer that it is a very frequent risk factor. It is possible that the responses to this item are linked to age-related sight problems.

*For those with high mileage, none of the mentioned causes seems to be able to cause an accident, except perhaps drink-driving.*

Driving too fast is rarely or sometimes a cause of accidents for persons with high mileage and high incomes. For those who drive little with low incomes, it is always a cause of accidents (see Figs 1.7-1.9).
Similarly, for respondents who are accustomed to using their vehicle often, defective brakes, faulty steering, poor road maintenance, bad weather conditions are rarely or never the
cause of an accident. Those who drive only a little think that these items frequently or very frequently cause accidents.

There is also a contrast between those who use their car a lot and those who use it a little as regards drink-driving. Those who drive a lot think that drink-driving is sometimes a cause of accidents, those who drive little consider that it is always a cause.

**As regards the behaviour of drivers and that of others**

*Figure 1.10: Self and others*

Young persons drive more dangerously. 40-54 year olds drive less dangerously.

The youngest age group (the under 25s) consider that they drive a little more dangerously than the others do, but also that the other drivers always exceed speed limits. On the contrary, the 40-54 age group think that they drive slightly less or even much less dangerously, and that other drivers often obey speed limits (see Fig 1.10).

*Persons with high mileage drive faster, in contrast to older persons.*

Persons who drive a lot, with a high level of education, think that they drive much faster than others do. The oldest persons state that they drive much less fast than average.

**As regards speed limits on roads**

*Persons with high mileage always exceed speed limits, and wish that these were higher. This contrasts with the elderly.*

Those who drive a lot state that they always exceed speed limits whatever the road. In contrast, persons over 55 years of age never exceed them (see Fig 1.11).
Similarly, respondents with high annual mileage would like speed limits to be increased on all types of roads or even for there to be no limits on motorways. In contrast, the oldest drivers would like speed limits to be lower, in particular in built-up areas and on main roads.

**As regards other road users**

*Persons who drive a lot and who have been in further education take many risks, unlike older persons*

Persons who drive a lot and who have been in further education often or very often follow the vehicle in front of them very closely, often drive through amber lights and often or very often flash their lights to warn other drivers about a police speed trap. They have more frequently been fined for excess speeding (see Fig 1.12).

On the other hand, the oldest persons never take these risks and have never been fined or otherwise punished for exceeding speed limits in the last three years. The youngest occasionally or rarely give way to a pedestrian, the 40+ age group always do.

**As regards seat belts**

*The young wear seat belts, whereas older persons are less aware of their effectiveness.*

Older drivers (40 and over) wear seat belts less frequently and are less convinced of their effectiveness, whereas the young wear them more often (see Fig 1.13). In addition, the vehicles generally driven by older drivers are not always fitted with front and rear seat belts. As regards penalties for not wearing seat belts, those who drive the most are the most affected - they tend to have been fined in the last three years (see Fig 1.14).
Figure 1.12: Other users

Figure 1.13: Seat belt wearing
As regards drinking and driving

Older people drink more than the young do.
It is apparent that, when they drink, the young drink many times during the week and that older persons drink almost every day (Fig 1.15). Socio-demographic structure does not seem to affect the number of days people drink and drive.

*Driving a lot leads to occasional driving under the influence of alcohol.*

On the other hand, the drivers who cover that largest annual mileage drive at least a few days a week after having consumed alcohol, even if only a small amount. Perhaps the fact that they drive a lot gives them a degree of confidence, which allows them to drive after drinking.

**As regards European harmonisation and vehicle related topics**

*Figure 1.16: Measures in European harmonisation context*

Older drivers do not like driving fast and are in favour of manufacturers limiting the speed of vehicles.

Persons of over 55 years of age do not consider that they get very annoyed with other drivers and do not like driving fast (Fig 1.16). However, they are in favour of obliging manufacturers to limit the maximum speed of vehicles.

*Younger drivers like driving fast and are opposed to manufacturers limiting maximum speeds.*

Persons under 40, or who have been in further education like driving fast and do not consider the car as being just a means of transport. In addition, they are opposed to manufacturers limiting the maximum speed of vehicles.
On the risk associated with activities other than driving

Older drivers consider that it is dangerous to drive a car or walk alone at night in urban areas whereas the young disagree.

Older drivers consider that it is dangerous to drive a car or walk alone at night in urban areas (Fig 1.17). However, those under 25 are in general not worried about walking alone at night in town or driving a car, but this age group have mixed views about smoking 2 packets of cigarettes a day or drinking alcohol.

As regards the number of accidents and estimates of road deaths

The young have more accidents.

When driving, the young have had one, two or more accidents in the last three years, whereas older drivers tend not to have had any (Fig 1.18).

Women overestimate the number of road deaths. The 40-54 age group is better informed about this.

Women considerably overestimate the number of persons killed on the road each year whereas the 40-55 age group is better informed about this number.
**Change in driver opinions between the two years**

The persons interviewed in 1997 seem to have very different responses to two questions, one relating to unemployment and the other to fines for speed limit violations. Whatever their country, SARTRE 2 respondents all seem very concerned about unemployment (48% compared to 23%). A possible partial explanation of this is that this variable had been moved to the beginning of the questionnaire. In 1997, 81% of respondents stated that they had not had a fine or other punishment for speeding in the previous three years. This could be compared to the 58% obtained in 1992, but in this case we asked on having ‘ever’ been fined, so that the decrease of fines is logically linked to the change of sentence.

If we consider all the results for opinion variables, we can see that SARTRE 1 respondents were in favour of increased regulations in particular in the areas of speed limits, drink-driving and the wearing of seat belts. They gave affirmative answers to questions about safety, accepting that poor weather conditions, faulty vehicle components (brakes, lights, etc.) and speed cause accidents.

For SARTRE 2, the tendency was reversed as respondents seem to consider that legislation is adequate and think that no further reduction in speed limits, for example, is necessary. However, there seems to be universal agreement as regards harmonisation for the third braking light. Similarly, drivers’ responses to the safety questions mentioned above are more often negative.
As car drivers

SARTRE 2 respondents think that factors related to the car, to the roads and to meteorological conditions rarely cause road accidents. The only vehicle related causes, which are considered a little more to be sometimes responsible for accidents, are bald tyres and faulty brakes.

In the case of SARTRE 1, the most common choice for this battery of questions was "always". We can therefore consider that individuals are more confident in their vehicles. This may be because technical check-ups were made compulsory in many European countries between the two phases of the survey so the vehicles driven by respondents are in better condition or simply that manufacturers are laying emphasis on vehicle safety.

The behaviour of drivers on the road

In general, cars are better equipped with safety systems and respondents drive more carefully (wearing seat belts, being considerate towards pedestrians, etc.). Drivers would like the speed limit to be increased on motorways and main roads. However, they seem to agree with the existing speed limit in built-up areas.

There are contradictory opinions about seat belts. Some respondents consider that they are not necessary when driving carefully; others state that they feel less comfortable without a seat belt.

On drinking and driving

None of the response items to the questions on alcohol is particularly prevalent.

On various topics

The desire not to have more "punitive" measures is still present as before (against harmonisation of the penalty points system), but on the other hand drivers wish manufacturers to improve the safety of vehicles (third brake light, limiting the maximum speed, etc.). Furthermore, those interviewed are rather pessimistic, considering that it is dangerous to walk alone at night or drive a car.

1.2 Analysis of the changes about drivers attitudes and behaviours for each country

For each country we detail what appear more significant for the country with regard to variation in result between SARTRE 1 and SARTRE 2 surveys.

For EU countries, when happen a deterioration of an indicator, we describe who are the drivers causing this deterioration. This may help to target actions to remedy to negative evolution of attitudes or behaviour to the corresponding road safety measure.

GERMANY (Western part)

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.
As car drivers

Respondents from the Western part of Germany are much more concerned about unemployment and rising crime but rather less about traffic congestion. A greater number of respondents are strongly in favour of improving driver training. They more often quote factors, which relate to drivers, alcohol, fatigue and speed as causing accidents, but more rarely factors that relate to vehicles or traffic conditions.

The behaviour of drivers on the road

They consider that more drivers break the speed limits, and more of them consider that they drive quicker than average themselves.

<table>
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<th>16% of the drivers in the Western of Germany think that they drive a little more faster than average compared to 11% in 1991.</th>
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<tbody>
<tr>
<td>Two thirds of this group are men with high incomes. Half of them are under 40 and have been in further education. They tend to live in cities or suburbs and are single or living as married.</td>
</tr>
<tr>
<td>15% of these individuals consider that they drive a little more dangerously than other drivers do, even though over 40% of them think that other drivers frequently exceed speed limits. Three quarters of them think that the speed limit in built-up zones should stay the same but many of them think that it should be increased on main roads and motorways, or even that there should be no limit at all on the latter.</td>
</tr>
<tr>
<td>They tend to exceed speed limits sometimes or often. Finally, more than 40% of them have been fined for excess speeding in the last three years.</td>
</tr>
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More of them are in favour of retaining the same speed limit in urban zones, on main roads and on motorways, and even lowering limits on motorways. They seem to be more careful and polite on the road. In 1997 almost all respondents' normal vehicles are fitted with front and rear seat belts.

<table>
<thead>
<tr>
<th>16% of drivers in the Western part of Germany agree with the phrase &quot;if you drive carefully, seat belts are not really necessary&quot;. In SARTRE 1, the figure was only 8%.</th>
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<tr>
<td>Three quarters of this group have been educated to primary or secondary level, 60% are male and half are married. They tend to be over 40 years of age, live in the country or in small towns and have low incomes.</td>
</tr>
<tr>
<td>40% of them do not agree with the statement &quot;when I'm not wearing my belt I feel less comfortable; as though something was missing&quot; and 10% have been fined for not wearing a seat belt in the last three years. 16% do not agree with the statement &quot;in most accidents, the seat belt reduces the risks of severe injury&quot;.</td>
</tr>
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On drinking and driving

More respondents now abstain completely from drinking before driving and think that drinking at all should be forbidden, even though they expect to be breathalised less frequently.

On various topics

In 1997, the proportion of those who agreed with European harmonisation of the penalty points licence reached three quarters. Another increase is that almost half respondents agree that the maximum speed of vehicles should be limited during manufacture and that vehicles should be fitted with a third braking light. Finally, for almost three quarters of respondents, the car is just a means of transport.
More of them think that it is very dangerous to walk alone in a town at night, to smoke 40 cigarettes a day, and to drink one bottle of wine or 1.5 litres of beer a day. More respondents also think that driving a car is fairly dangerous and overestimate the number of road deaths.

Summary

Drivers from the Western part of Germany are more concerned about unemployment and crime but less by all the factors, which relate to cars and traffic. More of them hold the view that accidents are caused by the drivers themselves.

Ideas as regards speeds are fairly contradictory. On the one hand, they want speed limits to stay the same, and on the other they consider that they exceed the average speed of other drivers while at the same time thinking more often that other drivers violate speed limits.

More of them do not drive when they have consumed alcohol and are in favour of European harmonisation. For them, the car has become a little more just a means of transport. Finally, they overestimate the number of road deaths to a slightly greater extent.

GERMANY (Eastern part)

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

As car drivers

In SARTRE 2, drivers from the Eastern part of Germany feel rather less concerned about social problems such as crime, pollution, traffic congestion than those in SARTRE 1. However, they are very concerned about the standard of medical care and unemployment, which we can consider to be important problems in the former East Germany. The responses as regards road accidents are a little more mixed.

The proportion of persons who are neither in favour nor against the government devoting more efforts to road safety measures increased between the two surveys, except with respect to improving the standard of roads. Vehicle-related factors and traffic conditions are given less importance as accident causes.

The behaviour of drivers on the road

With respect to speed, change seems to be positive, but it must be borne in mind that in 1992 the limits for non built-up roads were increased to those in force in the West of Germany (100 km/h on motorways until 1992, an advisory limit of 130 km/h after; 80 km/h on main roads before 1992, 100 km/h after). Compliance rates for the new levels are higher than for the old ones.

There has been a very marked increase in the number of drivers who have not been punished for excess speeding, which is perhaps due to higher limits or different intensity of police enforcement. The proportion of vehicles fitted with both front and rear seat belts has also greatly increased.
On drinking and driving

The former East Germans seem to have become more careful with respect to drink-driving. However the legal situation has also completely changed, as the legal limit has increased from 0.0 to 0.8 g/l between 92 and 97!

On various topics

They are less in favour of harmonising the penalty points licence and manufacturers limiting the maximum speed of vehicles, but have become much more in favour of the third braking light. They are less in conflict with other drivers and consider the car more from a practical point of view. They consider that it is more dangerous to walk alone at night, to drink or to smoke in 1997 than they did in 1992.

Summary

Drivers in the Eastern part of Germany do not have the same opinion of themselves as of others. More of them now think that other drivers are not very careful on the road whereas they are.

They are less in favour of European harmonisation. They still fail to see the effectiveness of a seat belt in an accident. Finally, they seem to be more concerned about social phenomena such as unemployment, the standard of medical care, alcohol or tobacco than by problems that are directly related to cars.

AUSTRIA

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

As car drivers

In 1997, Austrians seem more concerned about problems such as pollution and unemployment but less about road accidents than in 1992. The SARTRE 2 respondents are more indifferent about the government devoting more efforts to the mentioned road safety measures.

As regards factors that can cause road accidents, the responses of Austrian drivers are broadly the same as those from all European countries. They state that vehicle related problems rarely cause accidents.

Perhaps this change in Austrian drivers' perception of the cause of accidents has occurred because the safety of vehicles has been improved and drivers are more confident in their vehicle. They feel more concerned about social problems such as unemployment or environmental problems such as pollution.

The behaviour of drivers on the road

As regards speed, Austrian drivers seem in general more careful on the road in 1997 than they were in 1992. However, Austrian drivers are more willing to exceed the speed limit in built-up areas or on rural roads.
Generally, more of them want speed limits to stay the same and there is a tendency wish for an increase on major roads. They obey traffic laws more, are more considerate of pedestrians and more of them wear seat belts.

**On drinking and driving**

They drink less moderately but are more reasonable about drinking and driving in 1997 than they were in 1992.

<table>
<thead>
<tr>
<th>In 1997, 8% of Austrian drivers stated that they normally drank more than 5 units of alcohol. Only 3% did in 1992.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost 90% of them are men. They tend to be under 40 and either unmarried or living as married. They tend to live in large towns and drive at least 15,000 km a year.</td>
</tr>
<tr>
<td>Almost half of them consume alcohol once or twice a week, but at the same time more of them than the average consume alcohol 5 or 6 times a week or more. They state that they have not driven more than twice while possibly over the legal limit during the previous week. Over two thirds think that drivers should be allowed to drink as much as now and one third expect to be breathalised occasionally during a typical journey. They tend to think that drinking a bottle of wine a day is not dangerous.</td>
</tr>
<tr>
<td>Similarly, 18% of them state that when they do drink they consume between 3 and 4 units of alcohol, compared 14% in SARTRE 1.</td>
</tr>
<tr>
<td>Three quarters of this group are male. They tend to be under 25, unmarried or living as married. They have never, or once or twice, drive while possibly over the legal limit for alcohol in the previous week. Over two thirds of them think that drivers should be allowed to drink as much as now and 10% expect to be breathalised frequently during a typical journey. 6% of Austrian drivers expect to be breathalised frequently during a typical journey. Only 3% of them did in SARTRE 1.</td>
</tr>
<tr>
<td>Three quarters of this group are men. They tend to have low incomes and be more often single, divorced or living as married than the average. They tend to be under forty and drive less than 5000 km a year. One third of these drivers state that they never consume alcohol more than once or twice a week and that they never have more than three or four units. 40% state that they never drive when possibly over the legal limit, even if they think that they should be allowed to drink as much as now.</td>
</tr>
</tbody>
</table>

**On different topics**

As compared to 1992, they are less in favour of harmonisation of the penalty points licence in European countries and the limiting of the maximum speed of cars by manufacturers, but are more in favour of the third braking light.

Their behaviour on the road is more reasonable in 1997: they get less annoyed with other drivers, they have less pleasure in driving fast and more often think of the car as being just a means of transport.

In general, they are less well-informed about the number of road deaths. A degree of hostility for new regulations is apparent. This is linked to increased confidence in their vehicle, but worries about current problems (such as walking alone at night in town) have increased.

**Summary**

Behaviour seems to be "more public-spirited" or at least more careful in 1997 than it was in 1992. However, at the same time, there is a refusal to accept more regulations. The Austrian drivers in SARTRE 2 consume greater quantities of alcohol than those in SARTRE 1, but more of them do not drive after drinking.
Furthermore, more of them now are in favour of retaining the same legal limit for alcohol, or even reducing it. A tendency as regards speed is to maintain a cautious status quo. The behaviour of Austrians has become more careful but they do not wish to see tougher regulations.

**BELGIUM**

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

In the two surveys, the respondents do not have exactly the same socio-demographic characteristics. The SARTRE 2 respondents have lower incomes and tend more often to live in small towns or large conurbations. More of them are retired. However, these differences are not very important.

**As car drivers**

The Belgian drivers in SARTRE 2 seem more concerned about the social problems mentioned than they were in SARTRE 1. They are much more in favour of the government devoting more efforts to road safety measures, but paradoxically they are more opposed now than they were during the first survey to an increase in legislation.

They consider that road accidents are often caused by drivers not behaving sensibly. For all the questions, the items that appear are "often" and "sometimes" except in the case of driving when tired and driving too fast which many respondents give as a potential risk factor.

**The behaviour of drivers on the road**

More of them rarely exceed speed limits on motorways and main roads. The respondents claim to behave more responsibly while driving: they more often give way to pedestrians or less frequently drive through amber lights. Belgian drivers wear their seat belts more often. More of them think that seat belts reduce accident risk and feel less comfortable when they are not wearing one.

**On drinking and driving**

They are more reasonable as regards alcohol and driving.

| Nevertheless, 10% of Belgians think that drivers should be able to drink more than now, whereas only 6% did in 1992. |
|---|---|
| More than two thirds of this group are male. They tend to be in the 25 - 39 age group, or even under 25, to live alone or as married and to have been in further education. They tend to live in rural areas, have moderate incomes and drive at least 20,000 km/year. |
| They tend to consume alcohol once or twice a week. Almost a third of them have not driven after having consumed alcohol during the last week and one fifth of them have done so once or twice. |

They consider that they are at greater risk of being breathalised during a typical journey than before. The above observations should be viewed in the light of the 1994 reduction in the legal limit for alcohol from 0.8 to 0.5 g/l.

**On various topics**

They are more in favour of European harmonisation of the penalty points licence, of limiting the maximum speed of vehicles and the third braking light. Today they consider that it
is much more dangerous to walk alone at night in town, to drink and to drive a car. They overestimate slightly more the number of road deaths.

Summary

Belgian drivers therefore seem more in favour today of an increase in European road legislation. In addition, they are more responsible and more concerned about others, both as regards their behaviour or social problems such as walking alone in town at night.

For speed, as for public-spiritedness, the Belgian drivers questioned for SARTRE 2 state that they are more careful than those in SARTRE 1 were. This involves alcohol, wearing seat belts, overtaking when they think they can just make it, or driving through an amber light. However, they would like the speed limit to be higher.

SPAIN

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

In the two surveys, the respondents do not have exactly the same socio-demographic characteristics. The persons surveyed in 1997 have lower incomes, lower mileage and are more often workers or retired. These differences are not very important.

As car drivers

Spanish drivers are much more concerned about unemployment and rather more by road accidents. However, they are rather less concerned about traffic congestion. As regards the efforts devoted by governments to road safety measures in order to reduce accident risk, except for improving the standard of roads, the opinions of Spanish drivers are more mixed in 1997 whereas they were in favour in 1992. Those interviewed agree more now with stiffer penalties for road-related offences and that manufacturers should not be allowed to stress the speed of cars in their advertising.

As regards factors, which are likely to cause road accidents, more respondents think that driver behaviour, the road and vehicles are often or very often potential causes than they did for SARTRE 1.

The behaviour of drivers on the road

More of them think that other drivers often exceed speed limits but that they drive at the same average speed as other drivers and rarely break speed limits. They think that these limits should remain the same in built-up areas and on main roads but should be higher on motorways. Most of them have not been punished for excess speeding and the rest have only been fined.

They are more careful when driving as regards consideration of pedestrians and legislation. More cars are now fully equipped with seat belts, but the number is still small. Almost all the persons interviewed wear a seat belt for journeys on main roads or motorways, and more than half wear a seat belt in town, the latter representing a clear improvement. Almost all of them are a little more aware of its effectiveness, even when driving carefully and in accidents.
On drinking and driving

They drink greater amounts, but are more careful when they drive than they were for SARTRE 1 (The amount drunken is quite higher than in other countries, the reason could be in applying the definition of what a unit of alcohol is. This can lead to an over-estimation bias)

<table>
<thead>
<tr>
<th>11% of Spanish drivers drink more than 5 units of alcohol when they drink compared to 4% in 1992.</th>
</tr>
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<tbody>
<tr>
<td>Over 80% of this group are males under 40. More than half of them are unmarried. They tend to live in the country or in large towns, tend to have moderate or high incomes and to have been in further education. They often drive either more than 30,000 or between 5 and 10,000 km/year.</td>
</tr>
<tr>
<td>More than half only drink once or twice a week, and either never drive or drive once or twice a week after having consumed alcohol. They state that they never drive or drive once or twice a week when they think they are possibly over the legal limit. 40% consider that drivers should be allowed to drink as much as now. A quarter of them expect to be breathalised rarely during a typical journey and as many expect to be from time to time.</td>
</tr>
</tbody>
</table>

On different topics

In 1997 they tend to be less in favour of harmonising the penalty point licence, but more in favour of obliging manufacturers to limit the maximum speed of vehicles and the third braking light.

Summary

They are a little more in favour of governments making efforts to improve the standard of roads. More of them now consider that the roads, driver behaviour and the vehicles themselves constitute accident factors.

Like the drivers in the Eastern part of Germany, they do not have the same view of themselves and other drivers as regards careful driving, and consider that they are more careful than others. More of them wear seat belts, although in absolute terms the number is still not very high. Finally, they are less in favour of European harmonisation of the penalty points licence.

FRANCE

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

As car drivers

Like the average European driver, French drivers are much more concerned about unemployment in 1996 than they were in 1991. They are also more concerned about road accidents and the standard of medical care.

The interviewed drivers are more strongly opposed to extending technical check-ups to more vehicles, but on the other hand are more in favour of improving roads. There is no major change in opinion between SARTRE 1 and SARTRE 2 as regards the other accident factors.

The behaviour of drivers on the road

Drivers reveal themselves to be more careful on the road than they were for SARTRE 1, but would like speed limits to be higher. They think that speed limits should be higher on motorways and the same or higher in built-up areas.
Nine tenths of drivers have not been fined for speeding, compared to half in 1991. Could this be caused by the introduction of the penalty points licence which was introduced between the two surveys?

Almost all the French vehicles are now fitted with front and rear seat belts. Three quarters of drivers always wear a seat belt in urban areas and are more convinced of its effectiveness, without its absence making them uncomfortable.

**On drinking and driving**

More of them think that drivers should be able to drink as much as now. Legislation lowering the legal limit was introduced in France in 1995. The responses as regards the maximum permitted amount when driving are therefore mostly in favour of maintaining the status quo, or of increasing the level.

11% of drivers in SARTRE 2 stated that they should be able to drink more as opposed to 4% in 1991.

Over two thirds of this 11% of drivers are male. They tend to be in the 25 - 39 age group. They live alone or as married and tend to be educated to primary or secondary level. They live in towns and drive at least 10,000 km/year.

A third consume alcohol almost every day, but another third only once or twice a week. When they consume alcohol, they tend to drink 3 or 4 units. Almost the same percentage of them drive often or rarely after having consumed alcohol (about 30%). Finally a few of them expect to be tested for alcohol frequently in the course of a typical journey.

**On different topics**

They are more in favour of European harmonisation of the penalty points licence, of the maximum speed of vehicles being limited by manufacturers and on the third braking light. They think it is more dangerous to walk alone at night and to drive a car. Most of them overestimate the number of road deaths.

**Summary**

They seem to be more careful on the road, but do not want penalties to be more severe. However, they would like speed limits to be higher. The alcohol limit of 0.5 g/l seems to have been accepted.

**IRELAND**

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

**As car drivers**

Irish drivers are much more concerned about unemployment, the rise in crime and traffic congestion in 1997 than they were in 1992. More of them would like the government to devote more efforts to measures such as more enforcement of traffic laws or increasing the number of road safety campaigns in order to reduce the number of accidents. They are more opposed to stiffer penalties for offences. As regards accident factors, Irish drivers blame driver behaviour more and also, but to a lesser degree, vehicle condition.
The behaviour of drivers on the road

Irish drivers are in general more careful. However, they would like speed limits to remain the same or be increased in built-up areas and on main roads.

<table>
<thead>
<tr>
<th>In 1997, 24% of Irish drivers think that careful drivers do not need a seat belt, whereas only 11% thought this in SARTRE 1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of the 24% of Irish drivers who think that careful drivers do not need seat belts, two thirds are married men who have been educated to primary or secondary level. Half of them live in rural areas and are between 40 and 55 years of age. The others are either over 55 or between 25 and 39. Finally, they tend to have moderate incomes and drive between 5,000 and 10,000 km/year. Almost 40% of the vehicles normally driven by these individuals are fitted with seat belts on the front seats only. They tend to not wear a seat belt or even never wear one for urban journeys.</td>
</tr>
</tbody>
</table>

On drinking and driving

They drink more than before, but are more careful about drinking and driving.

On various topics

They are more strongly in favour of European harmonisation of the penalty points licence and the third braking light. More than three quarters of Irish drivers agree that cars are just a means of transport. They think that it is more dangerous to walk alone in town at night, but less to drink alcohol or drive a car. They are now better informed about the number of road deaths.

Summary

Irish drivers are more in favour of European harmonisation of the penalty point licence and the third braking light. However, they are less in favour of the maximum speed of vehicles being limited by manufacturers. They are more worried about problems of safety, but less about problems of alcoholism or the danger of driving a car.

They feel more concerned about social problems such as crime, unemployment and traffic congestion. They would like the government to make more efforts to increase the number of road safety campaigns and more enforcement of traffic laws.

In general, they seem to be more careful on the road, but do not think that driving is dangerous, unlike the respondents from other European countries such as Belgium. In general, they would like to see higher speed limits.

ITALY

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

The socio-demographic characteristics of the individuals in the two surveys are not exactly the same. More SARTRE 2 respondents live in rural areas, have moderate incomes and are in the intermediate age group (25-54). Small households are more common. The differences are quite large and must be taken into account when interpreting signs of change.
As car drivers

Italian drivers are more concerned in 1997 about problems such as rising crime, pollution and, to an even greater extent, unemployment. But they tend to be less concerned about the standard of medical care.

While in SARTRE 1 they were strongly in favour of increasing the number of road safety campaigns and extending technical check-ups to more vehicles, Italian drivers are now just moderately in favour. In addition, they are generally moderately in favour of improving driver training and increased enforcement of traffic laws and strongly in favour of improving the standard of roads.

They tend to be less in favour of or have mixed opinions about stiffer penalties for offences, but they are more in favour of restricting advertising that stresses the speed of cars. While for SARTRE 1 the responses were more extreme, being either in strong agreement or disagreement with the questions asked, the responses are now more moderate.

Many more of them consider that drink-driving or driving very quickly and driving while tired causes accidents. However, factors, which are related to the car or the condition of roads, are less often given as causes of accidents. We can therefore see the same phenomenon that we have already noticed in average European countries where drivers seem to be more confident in their vehicle and almost no longer perceiving the traditional risk factors as causing accidents.

As with the case above, the answers to the questions concerning accident causes were extreme in SARTRE 1. The answers have now become more moderate, except as regards driving when tired, when drunk or driving too fast.

The behaviour of drivers on the road

They more frequently consider today that other drivers often or very often exceed the speed limit, and that when driving they drive faster or as fast as the average driver does. However, they more frequently break the speed limit on main roads but less frequently on rural roads or urban roads. The respondents considered that speed limits should stay the same in urban areas and be higher on main roads and motorways. Most have not been punished for excess speeding.

<table>
<thead>
<tr>
<th>Who are the 20% of Italian drivers who state that they drive faster than the average driver does, when only 12% made this claim in 1992?</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than three quarters of this group are male and educated to secondary or primary level. Half of them have moderate incomes. They tend to live in small towns or rural areas. They are most frequently aged between 40 and 54 or are under 25 and usually live alone. Finally, they drive over 30,000 or between 10 and 20,000 km/year.</td>
</tr>
<tr>
<td>Half of them would like to see higher speed limits on main roads and motorways (or even no limit at all on motorways) and quarter of them would like higher speed limits in built-up areas. 40% of them consider that other drivers very often exceed speed limits, even if almost as many of them consider that they drive as dangerously as other drivers. They occasionally intentionally exceed speed limits and almost 30% of them have been fined for excess speeding in the last three years.</td>
</tr>
</tbody>
</table>

In general, they are more considerate of other drivers. Seat belts are more often fitted to Italian vehicles. However, they are rarely worn, and less so than in the past, even if respondents are more aware of their effectiveness.

| 22% of Italian drivers never wear a seat belt on main roads. The figure was only 12% in 1992. |
More than two thirds of this group are males and over 80% have been educated to primary or secondary level. They tend to have low incomes and live in small towns or suburbs. More than half of these drivers are under 40 years of age and a third are unmarried. Finally, they tend to drive either less than 5000 or more than 30,000 km/year.

Almost none of them wear a seat belt in town and half of them do not wear one on motorways. 90% of them do not agree with the statement "when I'm not wearing my belt, I feel less comfortable, as though something was missing" and over half of them agree with the statement "if you drive carefully, seat belts are not really necessary". 40% of the vehicles normally driven by these individuals only have front seat belts. More than 10% of them have been fined for not wearing a seat belt.

On drinking and driving

They tend to drink more, but drive less frequently when drunk. They consider that regulations concerning alcohol should be stricter and expect less to be checked than they did in SARTRE 1.

On different topics

More of them agree with European road safety harmonisation for road safety. But more of them think that it is more dangerous to walk alone at night in town, to drink alcohol or to drive a car and more of them seriously underestimate the number of road deaths every year.

Summary

In general, Italians seem to be less concerned about general social problems. They are also less concerned about all aspects of road safety. They are not very careful when driving: they drive fast and less frequently wear a seat belt, even if they are aware that it reduces the risks of serious injury.

The NETHERLANDS

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

The socio-demographic characteristics of the individuals in the two surveys are not exactly the same. The two survey years differ as regards incomes, those of SARTRE 2 respondents being higher. These differences are not very important.

As car drivers

The number of Dutch drivers who state they are not much concerned about rising crime or standard of medical care has increased. However, they are more concerned about pollution, traffic congestion or unemployment.

As regards the suggested risk factors for accidents, they more often reply that these sometimes and rarely cause road accidents. In SARTRE 1, often or very often were more frequently given as answers to these questions. Here too, what we probably observe is that drivers have become more confident in their vehicles.

The behaviour of drivers on the road

The number of drivers who rarely exceed the speed limit on main roads or in towns has increased, in other terms obedience has increased, in particular in towns. In 1997, there is a large increase in the number of Dutch drivers who think that speed limits should be increased on motorways. They think that they should remain the same in built-up areas and on main
roads. In 1992 more of them thought that speed limits should be higher on main roads or in built-up areas.

More Dutch drivers have been fined for speeding. They are more careful when driving and more considerate with pedestrians and other drivers. Three quarters of vehicles are now fitted with front and rear seat belts, which is a marked improvement.

**On drinking and driving**

They are more careful on the road and drink less than in 1991. They are a little more in favour of reducing the legal alcohol limit, which is currently 0.5 g/l, and few of them expect to be breathalised.

**On various topics**

More of them are in favour of European harmonisation to limit the maximum speed of vehicles. Even more of them are in favour of harmonisation for the third braking light. More of them are patient with others, but more of them also enjoy speed.

39% of Dutch drivers agree with the statement "I enjoy driving fast", compared to 30% in 1991.

Most of this group are male. They tend to be under 40, with high incomes and to have been in further education. They tend to live in large towns or suburbs, to be unmarried or living as married. They drive at least 20,000 km/year.

Half of them consider that they drive slightly faster than the average driver does, but also that they drive as dangerously as others do. They would like speed limits to remain the same in built-up areas or main roads but be raised on motorways. They state that they exceed speed limits only occasionally or often on motorways and rarely in towns. More than a third of them have been fined for speeding in the last three years.

They are more concerned about crime and tobacco. More of them are well-informed about the number of road deaths.

**Summary**

In general, Dutch drivers have adopted a more careful attitude, as witnessed by the wearing of seat belts and consideration for pedestrians and other drivers. However, they sometimes exceed speed limits, which they would like to remain the same in town and on main roads but to be raised on motorways. More of them do not drive after having consumed alcohol or do so only rarely, although this does not apply yet to all drivers.

**PORTUGAL**

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

The socio-demographic characteristics of the individuals in the two surveys are not exactly the same. The SARTRE 2 respondents have lower incomes, are younger, are more educated and are more often middle managers. These differences are quite large and should be taken into account when interpreting indications of change.
As car drivers

More Portuguese drivers are very concerned about unemployment or the standard of medical care in 1997. Some are rather more concerned about pollution or road accidents and rather less by traffic congestion.

In 1992, for SARTRE 1, almost two thirds of those interviewed were very concerned about road accidents. They tend to be in favour of governments in general devoting more effort to road safety measures, with the exception of technical check-ups.

Although in 1992, they were strongly in favour of the road safety measures which it was suggested governments could adopt, the results now are more moderate. In SARTRE 1, almost 60% of drivers were strongly in favour of extending technical check-ups to more vehicles. This percentage has now dropped to less than 10% in SARTRE 2.

There has been a large increase in the number of persons who think that people should not decide for themselves how much they can drink before driving, but the questions about road traffic offences and advertising which stresses the speed of vehicles received more moderate responses in 1997 than in 1992. The following are considered more often to be possible causes of accidents: drink-driving and driving very fast. Responses are more mixed as regards other potential accident factors.

The behaviour of drivers on the road

They consider that they are less dangerous now, but think that both they and other drivers drive faster. They are more willing to break speed limits, except perhaps in built-up areas. They would like to see higher speed limits on motorways and on main roads but for the same limits to be retained in urban areas.

Portuguese drivers give way less frequently to pedestrians than they did in 1992 as the commonest response at that time was "always" whereas now it is "sometimes" and "often". In addition, they more often drive through amber lights. Two thirds of vehicles are now fitted with seat belts, compared to one third in 1992. More than three quarters of drivers always wear a seat belt.

As regards current attitudes towards seat belts, almost all drivers think they reduce the risks of serious injury in an accident and over half of them feel less comfortable when they are not wearing one, but almost half think that it is not necessary to wear a seat belt if driving carefully, which also represents an increase.

38% of Portuguese drivers agree with the statement "if you drive carefully, seat belts are not really necessary" compared to 27% for SARTRE 1.

Almost three quarters of this group are males who have been educated to primary or secondary level. Almost two thirds of them are married and half live in small towns or rural areas. They tend to be over 40 and mostly drive at least 20,000 km/year.

More than half of the vehicles these individuals normally drive are only fitted with front seat belts. Over half of those interviewed do not agree with the statement "when I'm not wearing my belt, I feel less comfortable; as though something was missing". Only 6% of them have been fined for not wearing a seat belt.

On drinking and driving

They are more careful as regards driving under the influence of alcohol, and more of them agree with the current legal limit for alcohol (0.5 g/l).
On various topics

They tend to be less in favour of European harmonisation of the penalty points licence or limiting the maximum speed of vehicles by manufacturers, but are more in favour of it for the third braking light.

More of them get annoyed with other drivers and like driving very fast, but also more of them think that a car is just a means of transport. More of them think that it is dangerous to walk alone at night in town, to smoke more than two packets of cigarettes a day and to drive a car, but fewer of them think it is dangerous to drink alcohol.

Summary

Like the Italians, Portuguese drivers seem to be less concerned about matters that relate to road safety and road accidents. Like their Italian counterparts, they are also less careful on the road and like driving fast. However, more of them now always wear seat belts. They are more careful about not driving when they have consumed alcohol.

SWEDEN

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

As car drivers

Swedish drivers are much more concerned about unemployment and the standard of medical care in 1997 but rather less concerned about road accidents. They are now more in favour of tougher enforcement of traffic laws, increasing the number of safety campaigns, extending technical check-ups, improving driver training and improving the standard of roads.

They more often consider the following as being causes of accidents: driving when tired, drinking and driving and driving very fast. However, they more rarely consider that the following cause accidents: road maintenance, traffic congestion, and lighting. In other terms, Swedish drivers now see risk factors as being more related to drivers than vehicles.

The behaviour of drivers on the road

They have become more careful. However, they exceed speed limits a little more often on rural roads and rarely in town instead of never, which also represents a deterioration. Some Swedish drivers would like lower speed limits in built-up areas, but higher limits on motorways and main roads.

On drinking and driving

There are a few more drivers who drink a lot on each occasion, but also more drivers do not drive after having consumed alcohol.

On various topics

There has been a considerable increase in the number of persons opposed to harmonisation of the third braking light. They are much less annoyed by other drivers and think of the car as being just a means of transport. They are now more concerned about crime or smoking. They slightly overestimate the number of road deaths.
Summary

The Swedes feel more concerned about social issues such as unemployment, medical care and much less by issues which involve cars. However, they think that government activity in the area of accident prevention and road safety should be increased.

A slight deterioration as regards speed limits is apparent. Efforts to avoid driving under the influence of alcohol are increasing, but the proportion of heavy drinkers is increasing which represents a potential risk.

For Swedes, accidents are usually caused by drivers themselves. They are relatively careful and public-spirited when driving. Finally, they tend to be opposed to the third braking light when they were in favour of this measure in the last survey.

UNITED KINGDOM

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

As car drivers

Those interviewed are more concerned about unemployment, pollution, road accidents and traffic congestion than they were in 1991. They are more in favour of improving driver training and the standard of roads.

Their opinions are more mixed as regards stiffer penalties or the limitation of advertising which stresses speed. More of them now think that driving when tired or with faulty steering causes accidents.

The behaviour of drivers on the road

More of them would like to see lower speed limits in town and a great many more of them wish to retain the same limit on main roads or introduce a higher one. The number of drivers who always give way to pedestrians has also fallen. Almost all cars are now fully equipped with seat belts.

On drinking and driving

The British seem to drink a little more, but there has been a marked increase in the number of those who never drive after having consumed alcohol.

On various topics

They are less in favour of harmonisation. They are less annoyed by other drivers and fewer of them like driving fast.

Summary

In general, they are quite concerned about the social issues mentioned. They are in favour of improving the safety of drivers but more mixed about introducing stiffer penalties. They are careful drivers. They would like to see lower speed limits in built-up areas; they do not drive after having consumed alcohol and state that they do not like driving fast.
HUNGARY

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

The socio-demographic characteristics of the persons in the two surveys are not exactly the same. The SARTRE 2 respondents have lower incomes and are older. More of them are workers and retired persons. These differences are quite large and should be taken into account when interpreting indications of change.

As car drivers

The Hungarian drivers interviewed in 1997 are more concerned about crime, pollution, road accidents, the standard of medical care and unemployment. More of them state that most of the factors mentioned can lead to road accidents.

The behaviour of drivers on the road

More of them now think that they drive less dangerously than other drivers and that other drivers always exceed the speed limit. However, more of them also consider that they drive faster than the average driver does. Many of those interviewed in the more recent survey exceed speed limits less often and would like them to be higher in urban areas and on motorways. Fewer of them have been fined for speeding.

Hungarian drivers have become more careful. Almost half the vehicles are now fitted with both front and rear seat belts and almost two thirds of drivers wear a seat belt in built-up areas. Three quarters of them wear a seat belt on main roads and motorways, and half of them do not feel comfortable when not wearing one, which is an increase on 1992.

On drinking and driving

More of them do not drink during the week and do not drive after having consumed alcohol.

On various topics

They are more in favour of European harmonisation, in particular for the penalty points licence, the maximum speed of vehicles and the third braking light. They consider it is more dangerous to walk alone in town, to smoke or to drive a car but less dangerous to drink alcohol. They overestimate the number of road deaths.

Summary

They feel more concerned about all the problems and are more in favour of the proposed measures for increasing road safety. They consider that all the factors mentioned (roads, driver state) always cause accidents. Like the Czechs, they think they are more careful on the road than other drivers. They would also like speed limits to be higher in urban areas and on motorways.

Only half the vehicles are fitted with both front and rear seat belts but on the other hand drivers wear them more often. More of them state that generally they do not drive when they have consumed alcohol. Unlike the Czechs, they have become more favourable to European harmonisation. They overestimate the number of road deaths.
CZECH REPUBLIC

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

As car drivers

The Czechs feel more concerned about crime, road accidents and traffic congestion, but less concerned about unemployment and the standard of health care. They are more in favour of improving driver training but are less sure about road safety campaigns and technical check-ups. They are more in favour of stiffer penalties, but less in favour of drivers being allowed to decide for themselves how much they can drink before driving. They are less in favour of limiting advertising, which stresses the speed of cars.

While in 1992 Czech drivers gave more clear-cut answers to the questions about the causes of accidents, the responses now are more mixed. The dominant responses for a specific question are almost always "sometimes" and "rarely". One question breaks this rule: driving very fast is more often perceived as an accident factor.

The behaviour of drivers on the road

More of them think that they drive less dangerously than the average driver and that other drivers often exceed speed limits. They state more often that they themselves never exceed speed limits on motorways and sometimes or rarely in urban areas. They feel that the speed limit should stay the same in urban areas but be increased on main roads and motorways.

They are more considerate of pedestrians in 1997 and more careful, except perhaps as regards overtaking. There has been an appreciable increase in vehicles with both front and rear seat belts.

On drinking and driving

The quantities of alcohol consumed are falling. Czech drivers are more careful about drinking and driving, even though almost two thirds of them expect to be breathalised rarely, which is a marked increase.

On various topics

They are less in favour of European harmonisation of the penalty points licence and a limitation of the maximum speed of vehicles. Their views about the third braking light are more mixed. They tend to be calmer when they are driving and agree that the car is just a means of transport. They consider that all the mentioned activities are dangerous, except perhaps driving a car.

Summary

In contrast to other European drivers, the Czechs seem to have become more concerned about crime and vehicle related topics. They would like to see improved driver training and stiffer penalties.

They consider that speed is the main cause of accidents. Like the Italians and Spanish, many Czechs think that they drive more carefully than their fellow countrymen do. They would like the speed limit to be increased on main roads and motorways.
Almost half of the vehicles are fitted with front and rear seat belts and the opinions of Czechs are divided on this issue. Some think that the seat belt is indispensable and others not. They have become more careful with respect to speed and alcohol, but are against European harmonisation. They are less well-informed now about the number of road deaths.

**SLOVAKIA**

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

The socio-demographic characteristics of those interviewed in the two surveys are not quite the same. Those interviewed for SARTRE 2 have higher incomes, and tend more often to live in large towns or suburbs. These differences are not important.

**As car drivers**

In SARTRE 2, Slovak drivers are more often very concerned or fairly concerned about most of the items than in SARTRE 1. They are more in favour of devoting efforts to improving driver training or increasing the number of road safety campaigns.

They are very much more in favour of greater severity for offences but much less in favour of drivers being able to decide how much they can drink before driving. Driving very fast and faulty brakes are more often perceived as accident risks. For most of the items proposed in SARTRE 2, the responses "rarely" and "sometimes" dominate, whereas in 1992 the answers were more contrasted ("always", "never" or "very often").

**The behaviour of drivers on the road**

More of them think that they drive a little less dangerously than other drivers and that the others very often exceed speed limits, despite the fact that they think they drive as quickly as the average driver. They more rarely exceed speed limits on rural roads and rarely or sometimes do so on urban roads.

Almost half the drivers are in favour of higher speed limits on all types of roads and some of them are even in favour of no limit at all on motorways. They are more careful and considerate with respect to pedestrians and other drivers.

Almost half the vehicles are now fitted with both front and rear seat belts, and half the drivers wear one. More of them are aware of the effectiveness of wearing a seat belt even though more than half do not feel less comfortable without one.

**On drinking and driving**

They drink less than once a week, but more on each occasion. More than half of them do not drive after having consumed alcohol, which represents a rise. Almost all of them think that drivers should not be able to drink at all before driving.

**On various topics**

They tend to be less in favour of harmonisation for the penalty points licence or the maximum speed of vehicles but are more in favour for the third braking light. More of them get annoyed by other drivers or like to drive fast but also more of them think that a car is just a means of transport.
They think it is more dangerous to walk alone in town at night, to smoke two packets of cigarettes a day, to drink alcohol and to drive a car. They overestimate the number of road deaths.

**Summary**

The Slovaks feel more concerned about all the social problems. They would like the government to devote more efforts to road safety information. They are even more in favour of stiffer penalties with greater severity. They more often blame accidents on driver behaviour (driving very fast) and on bad vehicle maintenance (faulty brakes).

Like many drivers who live in Central Europe, but also in Italy and Spain, they consider that they drive less dangerously than their fellow countrymen do. Half of them would like speed limits to be increased on all types of roads. They have become more careful in relation to pedestrians, other drivers and the combination of alcohol and driving.

Only a little less than half of them wear seat belts and their opinions about them are contradictory. Most of them think that seat belts reduce the risk of serious injury, but more than half of them state that if you drive carefully it is not necessary to wear one and do not feel less comfortable without. They tend to be opposed to European harmonisation, except for the third braking light. Finally, they overestimate the number of road deaths.

**SWITZERLAND**

N.B.: in the comparisons the percentages from SARTRE 2, 96-97, have systematically been placed before those from SARTRE 1, 91-92.

**As car drivers**

In 1997, the Swiss are very concerned about unemployment but rather less concerned about crime, pollution, road accidents and traffic congestion. More of them are opposed to the government devoting more effort to road safety measures.

The opinions of Swiss drivers are more mixed with respect to the road safety propositions. Swiss drivers less often perceive vehicle related factors and more often perceive driver related factors as being potential accident risks.

**The behaviour of drivers on the road**

Swiss drivers more rarely exceed the speed limits on motorways, in urban areas or on main roads, but do so more frequently on rural roads. They would like the speed limit to stay the same on main roads and in urban areas or even for it to be lower in urban areas, however they would like higher speed limits, or even no speed limit at all, on motorways. Almost a third of those interviewed have been fined for speeding in the last three years, which represents a sharp increase.

The responses about courtesy on the road are more mixed than they were for SARTRE 1, as at that time more of them always gave way to pedestrians and never followed the vehicle in front too closely.

Almost all vehicles are now fitted with both front and rear seat belts. Three quarters of drivers wear a seat belt on all journeys, a marked progress. They feel less comfortable when they do not wear one.
On drinking and driving

Fewer of them drink. They drink less often, but more on each occasion. Less than a quarter never drive after having consumed alcohol but more than half consider that drivers should be allowed to drink as much as now, both of these findings represent an increase over SARTRE 1. There has also been a sharp increase in the number of drivers who expect to be breathalised.

On various topics

They tend to be more in favour of harmonisation in connection with the speed of vehicles and third braking lights but less in favour of European harmonisation of the penalty points licence. They tend to be less annoyed by other drivers and to enjoy driving fast less. However, the proportion of persons who consider that smoking is dangerous has increased, whereas the proportion who consider that it is dangerous to drink has fallen.

Summary

Like the French or the British, the Swiss are more often concerned about unemployment but not particularly worried by the other social issues. They are more opposed to the government devoting more efforts to road safety measures, except in order to improve the standard of roads.

They consider that drivers mainly cause accidents themselves. In general, they drive more carefully, exceeding speed limits less often, wearing their seat belts more and driving less after having consumed alcohol.

However, they would like speed limits to be raised on motorways and for the legal limit for alcohol to remain the same. They are more in favour of European harmonisation, except for the penalty points licence.

1.3 Conclusions

In general, from a socio-demographic point of view, data analysis shows the following contrasts among European car drivers: the main distinction is between younger/single and older/married drivers, next, to a lesser degree, there is a distinction between those who are comfortably off and those with small incomes. We find then, the rural and less educated opposed to the urban most educated, and lastly men more mobile opposed to women and less mobile.

The samples remained relatively stable between the two survey years, with the exception of certain countries, namely Belgium, Spain, Italy, Hungary, Portugal, the Netherlands and Slovakia. For some of these, it is possible to diagnose changes in sampling between the two surveys.

Income is the socio-demographic characteristic that has changed the most between the two survey years. Thus, depending on the country, people who are more comfortably off or less well off were interviewed. However, this information is not as reliable as that for other aforementioned characteristics.
Change in opinions and behaviours

For European countries as a whole, the following can be observed with respect to opinion variables:

• Older drivers feel today more concerned about social problems and persons with low incomes are more concerned about unemployment.

• Those with the highest annual mileage and the highest incomes are now more strongly opposed to governments increasing road safety measures and stiffer penalties.

• Older persons now consider that following the vehicle in front less often causes accidents, whereas poor lighting more often does. They think today that they drive less dangerously than others do, while the young think the opposite.

• Drivers with high mileage, who are also the most educated and who live in urban areas, seem confident in their driving as they consider that none of the proposed causes can result in an accident except perhaps drinking and driving. Similarly, more than in 91-92, they say they drive faster and always exceed speed limits, which they would like to be increased, and take a lot of risks when driving, unlike older drivers with low mileage.

• Younger drivers state that they wear seat belts whereas older drivers are less convinced of their effectiveness.

• However, older drivers drink more than younger drivers and driving a lot leads to occasional driving under the influence of alcohol.

• The young as well as those with a high level of education like driving fast and are not in favour of manufacturers limiting the maximum speeds of cars, unlike older persons living in rural areas.

• Older or less educated persons consider that it is dangerous to drive a car or walk alone in town at night whereas the young who are more educated or who live in urban areas disagree.

• Finally, the youngest drivers who live in towns have had more accidents than older drivers living in the country. Women overestimate the number of road deaths whereas men in the 40-55 age group are well-informed about this number.

At an overall level

At an overall level, the following changes in behaviour can be observed between the two survey years:

• Respondents seem to be more confident in their vehicle and in roads.

• Furthermore, although European drivers were in favour of more regulations in SARTRE 1, they now seem to find legislation adequate. In particular, more of them think that it is not necessary to reduce speed limits. Some would even like speed limits to be increased on motorways and main roads.

• Three quarters of the vehicles driven by Europeans are now fitted with both front and rear seat belts and most drivers wear seat belts for urban journeys. But a quarter of them still think "if you drive carefully, seat belts are not really necessary".

• More of them are considerate of pedestrians and other drivers.
• More of the drivers interviewed do not want European harmonisation as regards the penalty points licence, but would like harmonisation for the third braking light or even the limitation of vehicle speed by the manufacturer.

• Finally, they are more worried about social problems such as walking alone at night in town or even driving a car.

These trends are apparent for each country, with nevertheless some important differences as a result of their economic, social or historical position.

A cluster of countries

With reference to this, we can observe in driver behaviour the classical geographical division of European countries into three distinct groups: group 1 fairly in the North of Europe, group 2 in the South of Europe and group 3 in Central Europe.

In the first Group

The countries in the ‘North’ of Europe (Sweden, Belgium, the Netherlands, the Western part of Germany, Austria and Switzerland) are more concerned about social problems than they were in the first survey and seem to be more confident in their vehicles. They have no definite opinion about European harmonisation but state that they are more careful when driving, in particular with respect to other drivers and pedestrians. The seat belt has now been fully accepted in these countries, particularly Sweden and Germany, as almost all vehicles or at least three quarters of all vehicles are fully equipped and drivers wear them more and wear them on almost all journeys. The tendency is more that seat belt use slightly reduces in the countries with high levels and this is may be of concern. They seem to want speed limits to remain at present levels. They are more careful as regards alcohol and driving, even if they have not necessarily reduced their consumption.

The United Kingdom and Ireland are similar as regards driving and drink-driving behaviour to the ‘Northern’ European countries mentioned above. However with France, like drivers in Southern European countries, they would like speed limits to be higher on motorways and main roads. Finally, they feel concerned about social problems such as unemployment, the standard of health care and crime, but also by vehicle related issues (road accidents, traffic congestion) like the inhabitants of Central Europe.

In the second Group

The countries in the ‘South’ of Europe, i.e. Spain, Italy and Portugal are much more concerned about unemployment than they were during the first survey and would like governments to make increased efforts for roads. Drivers state that they drive fast and would often like speed limits to stay the same or even be increased. However, in general, they consider themselves to drive less dangerously than their fellow countrymen. Cars are better equipped with seat belts than they were in 1992, but seat belt wearing is not generally widespread. Special mention for Portugal with better figures than mean Europe for seat belts, also for not deciding by oneself about drinking before driving

In the third Group

The drivers in Central European countries, the Czech Republic, Slovakia, Hungary, to which we join the drivers from the Eastern part of Germany, are more often concerned about social problems, such as unemployment or crime, than they were in the first survey. In
addition, they do not have the high level of confidence in their vehicle which drivers from the other countries in Europe, in particular those from Northern countries, can display. The vehicles they normally drive are not always fitted with both front and rear seat belts, and they are not completely convinced that wearing seat belts is necessary. The Slovaks and Hungarians are more in favour of European harmonisation in the area of road safety, whereas drivers from the Eastern part of Germany, Czech and Slovakia are not.

References

Chapter 2  European car drivers’ opinions and norms about road safety measures and in-car devices

A non-linear canonical correlation analysis of the SARTRE 2 survey results to study differences and similarities between European and EU-car drivers

2.1 Introduction

The SARTRE 2 project

In 1991, a representative survey of drivers was conducted in 15 European countries. This project was named ‘SARTRE’, which stands for 'Social Attitudes to Road Traffic Risk in Europe'. This survey covered a wide spectrum of biographical driver data as well as opinions and attitudes to practically all subjects of road safety. More specifically, the survey focused on drivers road behaviour, attitudes and opinions concerning drinking and driving, speeding and seat belt use, opinions on accident causation and on traffic measures, experiences with police enforcement, perceptions of behaviours of other drivers, car preferences, experiences with driving in foreign countries, and risk perception. It has been carried out by national poll institutes, partly by means of the random-route method and partly by the quota method. Altogether more than 17.000 drivers participated in the survey. The results of the project have been described in two books (SARTRE 1994, 95)

One of the aims of SARTRE was to monitor car drivers’ changes in opinions, attitudes and norms over time. Therefore it was intended that the survey should be repeated within a 4- or 5-year interval. In 1996 the survey was held again, this time in 19 European countries and with an improved questionnaire. The new project was termed ‘SARTRE 2’.

The SARTRE 2 survey presents us with a unique database on traffic-related attitudes, behaviours and experiences in nineteen different European countries. This database enables us to make comparisons between countries, to study determinants of traffic behaviour and to determine the degree of societal support for different traffic measures.

This report describes the results of an in-depth statistical analysis into the results of SARTRE 2, focusing on the differences of European car drivers in opinions and norms concerning road safety measures and in-car devices.

In the next paragraph we will present a short description of the statistical method. In this paragraph we'll also give some attention to the statistical program 'CANALS' which was used to execute the statistical analysis. In paragraph 3 we will describe the results of the analyses. Finally, paragraph 4 gives a summary of the main findings and a general discussion of these findings.

Research questions

An important aim of the SARTRE 2 survey is to assist European policy makers in their decision making about traffic legislation, measures and campaigns. The planning of a unified
traffic policy and the attempt to harmonise traffic measures can benefit substantially from knowledge about how European car drivers differ and are similar to each other in their thinking about road safety measures. Therefore we need to understand how car drivers from different European countries compare with each other.

In this report we focus on the following research questions:

(a) What are the major dimensions along which differences in opinions concerning road safety measures may be ordered?

(b) How can we describe or interpret the dimensions along which European car drivers differ?

(c) Which groupings of European countries are similar or dissimilar on a particular dimension?

(d) Which countries occupy rather extreme (unique) positions on certain dimensions?

As we have mentioned before, the SARTRE 2 survey contains questions on various traffic topics. In this report we limit ourselves to study the above mentioned questions for opinions about traffic measures. The survey data on this issues were analysed to answer the research questions a, b and c.

2.2 Method

To study the European differences in opinions about road safety measures, a non-linear canonical correlation analysis was used. In this paragraph we'll briefly describe this analysis technique and the program 'CANALS' which was used to perform the analysis. A more thorough discussion of the analysis technique is presented in SARTRE (1994b).

In this paragraph the use of some technical jargon can not be avoided. We follow the explanation of concepts in van der Burg (1983) and in SPSS (1990). The presentation of the results in the next paragraph will be as non-technical as possible.

Canonical correlation analysis

Canonical correlation analysis (hereafter abbreviated as CCA) can be applied when we are dealing with two sets of variables. Our research problem also involves two sets of variables. We seek to know how European car drivers differ from each other and are similar to each other on a number of questions concerning road safety measures. Thus the research problem may be framed as the study of the relationships between one set of variables indicating different nationalities and another set of variables indicating opinions, and norms concerning road safety measures. In essence, CCA is an exploratory technique. The primary aim of this technique is not to test any specific hypotheses, but to reduce the complexity of a large data set.

In CCA, a weighted sum of variables is constructed for each set of variables in such a way that these weighted sums have a maximum correlation. This maximum correlation is called the canonical correlation and the corresponding weighted sums are called the canonical variates. The variables in the analyses have correlations with the canonical variates, called 'canonical loadings'. We may consider the canonical variates as dimensions underlying the differences between countries; the canonical loadings can be seen as co-ordinates or positions on these
dimensions. In our interpretation of the results we rely on visual plots of these canonical loadings.

If we are not satisfied with a single pair of canonical variates, a second pair can be computed which has a maximal correlation after the effect of the first pair has been removed. This means that the second pair of variates is perpendicular to the first pair. The number of pairs is also called the number of dimensions because it gives the dimensionality of the canonical solution.

The software program: CANALS

Many scales in the SARTRE survey are not metric, or there may be some doubt as to their metric qualities. Therefore, in the case of the SARTRE data, an analysis program should be used which both (1) can handle variables of a non-metric nature and (2) can perform canonical correlation analysis. The program CANALS fulfils these two criteria. CANALS (see Gifi, 1990; van der Burg, 1985; van der Burg and de Leeuw, 1983, SPSS, 1990)) can perform a non-linear canonical correlation analysis on data of different measurement levels (nominal, ordinal, numerical). CANALS has been called a non-linear technique because it uses non-linear transformations to re-scale variable values in order to maximise the canonical correlation between two sets of variables; CANALS (together with related programs like HOMALS for homogeneity analysis, PRINCALS for non-linear principal components analysis) has recently become part of the SAS and SPSS/PC software packages so that it is now widely available.

Design and interpretation of the analyses

Before we take a closer look at the results, some preliminary remarks on our use of non-linear CCA are in order. First, in all analyses one set of variables consisted of variables indicating nationalities and a second set of variables consisted of a selected subset of questions concerning traffic. For each country, a dummy variable was created by coding all respondents from that country as '1' and all other respondents as '2'. In this way 19 dummy variables were created for 19 countries. Each dummy variable can be seen as the indicator of one nationality.

Second, in all analyses three dimensions were specified. This means that the analysis aims to reduce the international differences on multiple issues to three more general dimensions along which various national groups may differ.

Third, the results of the analyses are based on a re-scaling of the original data. We specified an ordinal measurement level for all the selected questions. On the basis of this specification, the analysis program seeks to re-scale the original variable values so as to optimize the relationship between the two sets of variables. More relevant to our research questions, it may be stated that the re-scaling ensures an optimal discrimination between countries along the dimensions. For instance concerning the results of the first analysis, we see that question 3b ('Do you agree or disagree with the following statement: people should be free to decide for themselves how much they can drink and drive') has the following original variable values: 1 (Strongly agree), 2 (Agree) and 3 (Neither agree nor disagree), 4 (Disagree) and 5 (Strongly disagree). The re-scaled values for this variable are respectively. -1.720, -1.720, -0.809, -0.809 and 0.820.

A last point of clarification concerns the interpretation of the results. As we have explained before, the variables in the analyses have correlations with the canonical variates, called 'canonical loadings'. We may consider these canonical variates as 'underlying dimensions' and
the canonical loadings as co-ordinates or positions on these dimensions. In our interpretation of the results we rely on an inspection of graphical plots of these canonical loadings. As we will see in the next paragraph, these plots enable us to see very easily which countries lie close together on a dimension and which countries lie far apart, and moreover, which topics are involved in a dimension. In order to give one example of an interpretation of such a plot, let's direct our attention to Figure 2.1 where the countries and questions on the first two dimensions are positioned.

The general reference point in the figure is point (0,0). The correct interpretation of the figure requires that we know the direction of the range of scores for the variables. The range of scores for the questions is not the original range as coded by the interviewers, but a transformed range of scores as a result of the re-scaling done by our analysis program. In our interpretations of the results we have taken account of the re-scaled values of the variables. For the sake of readability we generally won't refer to these re-scaled values. The reader can implicitly infer from our interpretation the scale of the variables. Of course, the reader can always check upon the exact nature of the relevant variable values by consulting the Appendices.

In Figure 2.1 we see for instance that the dummy-variable representing Greece (with values 1 = Grecian; 2 = non-Grecian) and question 3b concerning the freedom to decide to drink and drive (with re-scaled values -1.72 (Strongly agree), -1.72 (Agree), -0.809 (Neither agree nor disagree), -0.809 (Disagree) and 0.820 (Strongly disagree) are lying close together and a distance away from the reference point. This means that there is a close relationship between those two variables in the sense that low values on one variable will tend to be associated with low values on the other. Specifically, being Grecian (low value 1 of the dummy-variable) tends to go together with agreeing (low values -1.72) and not to go together with strongly disagreeing (high value 0.82).

If two variables lie far apart in a opposite direction, e.g. the dummy-variable representing Sweden and question concerning freedom in drinking and driving in Figure 2.1, then low values on one variable tend to be associated with high values on the other. Thus, being Swedish (the low value of the dummy variable) tends to go together with strongly disagreeing with freedom in drinking and driving (the high value of this question). The further apart the variables lie from the zero-point either in opposite directions or in the same direction, the stronger the relationship between the variables will be.

The plots of canonical loadings show the differences and similarities between European drivers in a graphic, two-dimensional way. The extent of these differences is further clarified by providing the answer percentages of countries and questions that dominate the analysis dimensions. The plots show us the differences in countries in a spatial way; the tables give us an idea of the differences in percentages. Details about analyses carried out can be found in the appendice of a draft report (Goldenbeld, 98).

### 2.3 Results

**Results analysis all 19 sample-countries**

In the first analysis the first set of variables consisted of 19 dummy-variables representing the 19 countries in the SARTRE-survey (in alphabetical order): Austria, Belgium, Czech
Opinions and norms

Republic, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom. The second set of variables was chosen from 25 questions which all concern personal opinions and norms regarding road safety measures (see Table 2.1).

Table 2.1: Questions in the SARTRE 2 survey selected for analysis

| Questions 2a-2e: Opinions about government devoting more effort to certain road safety measures | 2a improving driver training  
2b more enforcement of traffic laws  
2c more road safety campaigns  
2d test road worthiness of more vehicles  
2e improve the standards of roads |
|---------------------------------|--------------------------------------------------|
| Questions 3a-3b: Personal norms concerning punishment, drinking and driving, freedom of car manufacturers and public transport | 3a Penalties for driving offences should be more severe  
3b People should be allowed to decide for themselves how much they can drink and drive  
3c Car manufacturers should not be allowed to stress the speed of their cars in their advertisement  
3d Better public transport is needed |
| Questions 5a-5b: Opinions about the extent of consideration to be given to different transport modes in future planning | 5a pedestrians  
5b cyclists  
5c motorcyclist  
5d cars  
5e lorries  
5f public transport |
| Questions 27a-27b: Opinions about the European introduction of road safety measures | 27a A penalty points system  
27b A requirement that manufacturers modify their vehicles to restrict their maximum speed  
27c Regular technical check-ups for all types of vehicle  
27d Installation of a third braking light  
27e Not allowing new drivers to drink any alcohol before driving |
| Questions 31a-31e: Estimates of the personal usefulness of several in-car devices | 31a a guidance system to find the way of destination  
31b a device to assist you not to exceed the legal speed limit  
31c a distance control system to maintain a safe distance automatically  
31d an alcohol-meter to check if you are over the legal limit  
31e a mobile telephone |

For the analysis, 24 from the 25 questions in table were chosen for inclusion in the second set. One of the 25 questions, question 27e pertaining to the special zero alcohol limit for young drivers, was left out of this analysis. This was done because three countries Czech Republic, Slovakia and Slovenia in fact have a zero limit for all car drivers so that question 27e could not be meaningfully asked in these countries. In these three codes a special code was filled in for all respondents for this particular question. Inclusion of this question together with the three countries in one analysis would completely distort the outcomes of the analysis, since one of the main dimensions of the analysis would then be the deviant and homogeneous answer pattern of these three countries on this particular question.

The canonical correlations for each of the three dimensions were respectively: 0.66, 0.60 and 0.56. The correlation for the third dimension is somewhat lower than for the first two dimensions, but high enough to warrant a closer look at the possible meaning of this dimension.
A plot of the main opposing countries and questions along the first two dimensions is given in Figure 2.1. We may remind you that the plot in Figure 2.1 is a graphical display of the canonical loadings of the variables on the canonical variates of the first set (the countries). This means simply that both countries and questions in the analysis are projected onto a two-dimensional space in which the differences between countries are optimal.

**Figure 2.1: Personal opinions and norms in all the 19 countries (canonical loadings, dimension 1 and 2)**

Let’s turn our attention to the interpretation of Figure 2.1. Figure 2.1 shows that on the first horizontal dimension Switzerland, Germany, Sweden, Austria and Finland lie opposite and some distance removed from Poland, Hungary, and Czech Republic, with Switzerland and Poland at the far most opposite ends of the dimension. The question with the highest loading on this dimension is question 2e (How much effort should government devote to improvement of standards of roads?). The opposite clusters of countries along the first dimension should be mainly understood in terms of diverging answers on this particular question (See Table 2.2).
The first dimension is very much dominated by a division of countries in terms of their need for improvement of the road system, with at one extreme Swiss drivers who profess relatively low need for improvement and at another extreme Polish drivers who profess a very high need.

Question 2e obviously dominates the division of countries along the first dimension, but there are two other questions that have moderate loadings on this dimension: question 2b (Should government devote more attention to more enforcement of traffic laws?) and question 2d (Should government devote more attention to testing of vehicles?). Table 2.2 shows that in general the same countries who compared to others are very strongly in favour of improvement of roads (Poland, Hungary, Czech Republic) are also more strongly in favour of more enforcement of traffic laws. The countries with a relatively low need for improvement of roads (Switzerland, Austria, Finland, and Sweden) are relatively less in favour of more enforcement of traffic laws. In the same vein, countries who have a high need for improvement of roads (Switzerland, Finland, Sweden) tend to be less interested in government devoting more attention to testing of vehicles than countries with a high need for improvement (Hungary and Poland).

In conclusion, the first dimension divides countries in terms of their need for improvement of roads, enforcement of traffic laws and testing of vehicles. The dimension is dominated by the division around the issue of improvement of roads and the somewhat smaller divisions around the issues of enforcement of traffic laws and testing of vehicles. There is a connection between these divisions in the sense that high need for improvement of roads tends to go along with relatively high need for enforcement of traffic laws and testing of vehicles.

Table 2.2: Main clusters of countries and opinion issues along the first dimension (countries with most extreme position on dimension in bold)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue Strongly favour improve standards roads</th>
<th>Secondary issue Strongly favour more enforcement</th>
<th>Secondary issue Strongly favour testing of more vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>27% 19%</td>
<td>11% 15%</td>
<td>9% 10%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>26% 35%</td>
<td>15% 24%</td>
<td>4% 25%</td>
</tr>
<tr>
<td>Finland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Versus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>85% 72%</td>
<td>34% 45%</td>
<td>44% 17%</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>81%</td>
<td>39%</td>
<td>32%</td>
</tr>
<tr>
<td>Hungary</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On the second vertical dimension in Figure 2.1, Greece, France and Spain lie a distance removed from Sweden, Czech Republic and Finland. The question with the highest loading on this dimension is question 3b: (Agreement with statement: People should be free to decide for themselves how much they drink before driving). As can be seen in Table 2.3, Greece, France and Spain have a far smaller proportion of drivers who strongly disagree with this statement than Sweden, Czech Republic and Finland.
The questions 3c (Agreement with statement: Car manufacturers should not be allowed to mention speed in their advertisements) and 31d (Use for alcohol meter in car) have somewhat lesser loadings on the second dimension, but high enough to warrant a closer look at the differences between countries on these questions (see Table 2.3).

### Table 2.3: Main clusters of countries and opinion issues along the second dimension
(countries with most extreme position on dimension in bold)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue: Strongly disagree with freedom drink-drive</th>
<th>Secondary issue: Strongly agree car manufacturers should not stress speed</th>
<th>Secondary issue: No use at all for the alcohol-meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>16%</td>
<td>11%</td>
<td>12%</td>
</tr>
<tr>
<td>France</td>
<td>41%</td>
<td>36%</td>
<td>13%</td>
</tr>
<tr>
<td>Spain</td>
<td>44%</td>
<td>22%</td>
<td>28%</td>
</tr>
</tbody>
</table>

**Versus:**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>86%</td>
<td>5%</td>
<td>22%</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>69%</td>
<td>3%</td>
<td>51%</td>
</tr>
<tr>
<td>Hungary</td>
<td>64%</td>
<td>5%</td>
<td>49%</td>
</tr>
<tr>
<td>Finland</td>
<td>93%</td>
<td>22%</td>
<td>30%</td>
</tr>
</tbody>
</table>

It appears that French and Spanish drivers who, compared to other European drivers, are less strict as regards freedom in drinking and driving, are more willing to place restrictions on the freedom of car manufacturers to advertise with speed. On the other hand, Swedish and Czech drivers who very strongly disapprove of freedom of drinking and driving are not very much inclined to place restrictions on car manufacturers as to the contents of their car advertisements.

Maybe somewhat counterintuitive, the French and Grecian drivers who tend to be less strict as regards freedom in drinking and driving, do tend to evaluate the alcohol-meter as a useful personal device. The Czech drivers and Hungarian drivers - very disapproving of freedom in drinking and driving - tend to see very little personal usefulness in such a device.

In conclusion, the second dimension is mainly dominated by a division of countries in terms of their strictness as regards freedom of drinking and driving. Some smaller, concurrent divisions along this dimension have to do with opinions about the use of speed in car advertisements and the alcoholmeter. There are some (moderate) interrelations between these three issues to the extent that some of the countries who are relative less fierce in their disapproval of freedom in drinking-and-driving show relatively more disapproval of car manufacturers advertising with speed and more enthusiasm about the usefulness of the alcohol-meter. At one extreme of the dimensions we find French drivers - less strict towards drinking and driving, more strict towards car manufacturers and relatively enthusiastic about the alcohol-meter); on the other end, we find Czech drivers - very strict towards freedom in drinking and driving, not enthusiastic about the alcohol-meter and less willing to interfere with freedom of car manufacturers to use speed. Figure 2.2 shows a plot of the canonical loadings in the space of the first and third dimension.
The issues diving countries along the third dimension are: the usefulness of mobile telephone and the alcoholmeter and the European introduction of regular technical check-ups of all kinds of vehicles (see Table 2.4). German, Austrian, Slovakian and Czech drivers tend to agree with another that both the mobile telephone and the alcohol-meter are not very useful and with the exception of Czech drivers this group of drivers is also very in favour of an European introduction of technical check-up of all types of vehicles.
Table 2.4: Main clusters of countries and opinion issues along the third dimension (countries with most extreme position on dimension in bold)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue: No use at all for the mobile telephone</th>
<th>Secondary issue No use at all for the alcohol-meter</th>
<th>Secondary issue Very in favour of European introduction of technical check-ups</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sweden</strong></td>
<td>17%</td>
<td>22%</td>
<td>25%</td>
</tr>
<tr>
<td>Portugal</td>
<td>22%</td>
<td>16%</td>
<td>15%</td>
</tr>
<tr>
<td>Finland</td>
<td>11%</td>
<td>30%</td>
<td>49%</td>
</tr>
<tr>
<td><strong>Versus:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Germany</strong></td>
<td>50%</td>
<td>53%</td>
<td>65%</td>
</tr>
<tr>
<td>Austria</td>
<td>55%</td>
<td>52%</td>
<td>58%</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>37%</td>
<td>51%</td>
<td>31%</td>
</tr>
<tr>
<td>Slovakia</td>
<td>32%</td>
<td>47%</td>
<td>87%</td>
</tr>
</tbody>
</table>

An opposing cluster of countries on the third dimension is formed by Sweden, Finland and Portugal. The Swedish, Finnish and Portuguese drivers tend to be somewhat more enthusiastic about the personal usefulness of alcohol-meter and mobile telephone and, on the other hand, less enthusiastic about an European introduction of regular technical check-ups of all types of vehicles.

**Results analysis with question 27e included**

A second analysis was done with question 27e included (Would you be in favour of the introduction of the following measures throughout European countries? Not allowing new drivers to drink any alcohol before driving?). Consequently, the three countries in which this question could not be meaningfully asked were left out of the analysis.

In this analysis, the first set of variables consisted of dummy-variables representing 16 countries (in alphabetical order): Austria, Belgium, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Spain, Sweden, Switzerland and United Kingdom.

The second set of variables consisted of the 25 questions in Table 2.1. The canonical correlations for the three dimensions were respectively: 0.66, 0.62 and 0.57. Figure 2.3 shows the graphical display of the canonical loadings of the variables on the canonical variates of the first set.

As can be seen in Figure 2.3, Switzerland, Germany, Austria, Sweden and Finland are some distance removed from Hungary, Greece, Ireland and Italy. Again, as in the previous analysis, the question 2e has by far highest loading on this dimension, signifying that the differences between countries on this question in large part explain the meaning of this dimension. Besides question 2e, questions 2d (How much effort should government spend to testing of more vehicles?), 31a (Personal usefulness of guidance system) and 5d (How much consideration to cars in future planning) also have sizeable loadings on this dimension. Table 2.5 gives the answer percentages on the main dividing issues for the opposing clusters of countries.
Figure 2.3: Personal opinions and norms in all the 19 countries, with question 27e included (canonical loadings, dimension 1 and 2)

Table 2.5: Main clusters of countries and opinion issues along the first dimension (countries with most extreme position on dimension in bold)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue: Strongly in favour of Government devoting more effort to improving standards of roads</th>
<th>Secondary issue: Strongly in favour of Government devoting more effort to testing road worthiness of more vehicles</th>
<th>Secondary issue: Not at all use for a guidance system to find the way to destination</th>
<th>Secondary issue: Very much consideration should be given to cars in future planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switzerland</td>
<td>19%</td>
<td>10%</td>
<td>35%</td>
<td>21%</td>
</tr>
<tr>
<td>Germany</td>
<td>37%</td>
<td>30%</td>
<td>35%</td>
<td>32%</td>
</tr>
<tr>
<td>Austria</td>
<td>35%</td>
<td>25%</td>
<td>46%</td>
<td>25%</td>
</tr>
<tr>
<td>Sweden</td>
<td>27%</td>
<td>9%</td>
<td>21%</td>
<td>31%</td>
</tr>
<tr>
<td>Finland</td>
<td>26%</td>
<td>4%</td>
<td>24%</td>
<td>38%</td>
</tr>
</tbody>
</table>

Versus:

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue: Strongly in favour of Government devoting more effort to improving standards of roads</th>
<th>Secondary issue: Strongly in favour of Government devoting more effort to testing road worthiness of more vehicles</th>
<th>Secondary issue: Not at all use for a guidance system to find the way to destination</th>
<th>Secondary issue: Very much consideration should be given to cars in future planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hungary</td>
<td>81%</td>
<td>32%</td>
<td>21%</td>
<td>59%</td>
</tr>
<tr>
<td>Greece</td>
<td>64%</td>
<td>33%</td>
<td>23%</td>
<td>53%</td>
</tr>
<tr>
<td>Ireland</td>
<td>82%</td>
<td>37%</td>
<td>18%</td>
<td>64%</td>
</tr>
<tr>
<td>Italy</td>
<td>69%</td>
<td>25%</td>
<td>10%</td>
<td>43%</td>
</tr>
</tbody>
</table>
The Swiss, German, Austrian, Swedish and Finnish drivers tend to hold similar opinions on a number of issues. To summarize these opinions: relatively low interest in or need for improvement of roads and more testing of vehicles, reserved attitude towards personal usefulness of an in-car guidance system and moderate support only for giving much consideration to cars in planning for the future.

The mirror image of this answer pattern is shown by the answers of the Hungarian, Grecian, Irish and Italian drivers (see Table 2.5). To summarize the general trend of opinions of these drivers: very high support for improvement of roads and more than moderate support for testing of more vehicles, relative more enthusiasm about an in-car guidance device and large support for giving very much consideration to cars in planning for the future.

Turning our attention to the second dimension of Figure 2.3, we see Hungary and Sweden lying far apart from France, Greece, Portugal and Spain. As in the previous analysis, question 3b (Agreement with statement that people should be free in deciding for themselves how much they drink before driving) has the highest loading on this dimension.

Further questions that have sizeable loadings on this dimension are question 31e (personal usefulness of the mobile telephone) and 3b (Agreement with statement that car manufacturers should not be allowed to stress the speed of cars in their advertisements). The meaning of this dimension should in large part be explained by differences on these three questions (see Table 2.6).

### Table 2.6: Main clusters of countries and opinion issues along the second dimension (countries with most extreme position on dimension in bold)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue: Strongly disagree with statement that people should be free to decide for themselves how much they drink before driving</th>
<th>Secondary issue No use at all for the mobile telephone</th>
<th>Secondary issue Strongly agree with the statement that car manufacturers should not be allowed to stress the speed of cars in their advertisement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hungary</td>
<td>64%</td>
<td>18%</td>
<td>5%</td>
</tr>
<tr>
<td>Sweden</td>
<td>85%</td>
<td>17%</td>
<td>5%</td>
</tr>
<tr>
<td>Versus:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>41%</td>
<td>51%</td>
<td>36%</td>
</tr>
<tr>
<td>Greece</td>
<td>16%</td>
<td>50%</td>
<td>11%</td>
</tr>
<tr>
<td>Portugal</td>
<td>41%</td>
<td>22%</td>
<td>4%</td>
</tr>
<tr>
<td>Spain</td>
<td>44%</td>
<td>47%</td>
<td>22%</td>
</tr>
</tbody>
</table>

Hungarian and Swedish drivers have similar opinions in the sense that they strongly disapprove of freedom in drinking-and-driving, are not willing to place restrictions on the freedom of car manufacturers to use speed in their car advertisements and are enthusiastic about the personal usefulness of the mobile telephone.

The French, Grecian, Portuguese and Spanish drivers tend to 'flock together' in the sense that they are less severe in their disapproval of freedom in drinking-and-driving, are far less enthusiastic about the personal usefulness of the mobile telephone and are somewhat more
willing to curtail the freedom of car manufacturers to use speed in their advertisements. Figure 2.4 shows the graphical display of the canonical loadings of the variables on the first and third dimension (canonical variates of the first set).

Figure 2.4: Personal opinions and norms in all the 19 countries, with question 27e included (canonical loadings, dimension 1 and 3)

The differences between countries and the issues at stake on this dimension are almost the same as in our earlier analysis. Again we find the cluster of Swedish, Finnish and Portuguese drivers being relatively enthusiastic about the mobile telephone (and the alcohol-meter) and relatively reserved about regular testing of vehicles (on a national or European scale). Again, as before, we find German and Austrian drivers expressing the opposite pattern of opinions.
Table 2.7: Main clusters of countries and opinion issues along the third dimension (countries with most extreme position on dimension in bold)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue: Very much in favour of European introduction of regular technical check-ups for all types of vehicles</th>
<th>Secondary issue Strongly favour Government devoting more effort to testing roadworthiness more vehicles</th>
<th>Secondary issue No use at all for the mobile telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>65%</td>
<td>30%</td>
<td>50%</td>
</tr>
<tr>
<td>Austria</td>
<td>58%</td>
<td>25%</td>
<td>55%</td>
</tr>
<tr>
<td>Versus:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>15%</td>
<td>9%</td>
<td>22%</td>
</tr>
<tr>
<td>Sweden</td>
<td>25%</td>
<td>9%</td>
<td>17%</td>
</tr>
<tr>
<td>Finland</td>
<td>49%</td>
<td>4%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Results analysis 13 EU-countries

In the EU-only analysis the first set of variables consisted of dummy-variables representing the 13 EU-countries (in alphabetical order): Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, and United Kingdom.

The second set of variables consisted of the 25 questions that were used in the analysis. The canonical correlations for the three dimensions were respectively: 0.66, 0.60 and 0.52.

Figure 2.5 shows a graphical display of the canonical loadings on the canonical variates of the first set. As can be seen in this figure, on the first horizontal dimension Greece, Italy, Portugal and France lie some distance away from Sweden, Finland, Germany and Netherlands. There are two questions that have high loadings on this dimension: question 3b (Agreement with statement: People should be free to decide for themselves how much they drink before driving) and question 2e (How much effort should government devote to improving the standards of roads?).

One cluster of countries (Sweden, Finland, Germany and Netherlands) is very strong in its disapproval of personal freedom in drinking and driving and tends not to be so strongly in favour of improvement of roads (see Table 2.8). Another cluster of EU-countries (Greece, Italy, Portugal, and Spain) tends to be less strict in regard to drinking-and-driving and is more strongly in favour of the government spending more effort in improving standards of roads.
If we take a look at the second vertical dimension in Figure 2.5, we see that Portugal, Sweden and Finland are far removed from Austria and Germany on this dimension. The questions with highest loadings on this dimension are question 31e (personal usefulness of mobile telephone), question 31d (personal usefulness of alcohol-meter) and question 27c (European introduction of technical check-ups of vehicles).

Austrian and German drivers tend to be reserved in their judgements about the personal usefulness of both the mobile telephone and the alcohol-meter and are very strongly in favour of an European introduction of technical check-up of vehicles. On the other end of this dimension, Portuguese, Swedish and Finnish drivers show a mirror-opposite answer pattern, with more enthusiasm for both the mobile telephone and the alcohol-meter and less preference for the European introduction of technical check-up on vehicles.
Table 2.8: Main clusters of countries and opinion issues along the first dimension (countries with most extreme position on dimension in bold)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue: Strongly disagree with freedom drink-drive</th>
<th>Secondary issue: Strongly agree improve standards roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>16%</td>
<td>64%</td>
</tr>
<tr>
<td>Portugal</td>
<td>41%</td>
<td>72%</td>
</tr>
<tr>
<td>Italy</td>
<td>24%</td>
<td>68%</td>
</tr>
<tr>
<td>France</td>
<td>41%</td>
<td>45%</td>
</tr>
</tbody>
</table>

Versus:

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue: No use at all for mobile telephone</th>
<th>Secondary issue Very much use for alcohol-meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>86%</td>
<td>27%</td>
</tr>
<tr>
<td>Finland</td>
<td>93%</td>
<td>26%</td>
</tr>
<tr>
<td>Germany</td>
<td>63%</td>
<td>37%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>75%</td>
<td>22%</td>
</tr>
</tbody>
</table>

Table 2.9: Main clusters of countries and opinion issues along the second dimension (countries with most extreme position on dimension in bold)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue: No use at all for mobile telephone</th>
<th>Secondary issue Very in favour of European regular check-ups</th>
<th>Secondary issue Very much use for alcohol-meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portugal</td>
<td>22%</td>
<td>15%</td>
<td>21%</td>
</tr>
<tr>
<td>Sweden</td>
<td>17%</td>
<td>25%</td>
<td>33%</td>
</tr>
<tr>
<td>Finland</td>
<td>11%</td>
<td>49%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Versus:

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue: No use at all for mobile telephone</th>
<th>Secondary issue Very in favour of European regular check-ups</th>
<th>Secondary issue Very much use for alcohol-meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>50%</td>
<td>65%</td>
<td>10%</td>
</tr>
<tr>
<td>Austria</td>
<td>55%</td>
<td>58%</td>
<td>9%</td>
</tr>
</tbody>
</table>

The pattern of differences along the second dimension in this analysis is the same as the pattern of differences along the third dimension in our earlier analyses.

Figure 2.6 describes the first and third dimension. On the third dimension France, Belgium, Finland and Spain lie far removed from Italy and UK. Two questions have sizeable loadings on this dimension: question 2d (How much effort should government devote to increasing technical check-ups?) and 5f (When planning for the future how much consideration should be given to public transport?). In interpreting this dimension we should focus on the differences on these questions (see Table 2.9).
Figure 2.6: Personal opinions and norms in the 13 EU countries (canonical loadings, dimension 1 and 3)

Table 2.10: Main clusters of countries and opinion issues along the third dimension (countries with most extreme position on dimension in bold)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Main issue: (Strongly) favour Government devoting more effort to testing more vehicles</th>
<th>Secondary issue Very much consideration to public transport in future planning</th>
<th>Secondary issue Very much in favour of European introduction of penalty points system</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>43%</td>
<td>42%</td>
<td>20%</td>
</tr>
<tr>
<td>Belgium</td>
<td>59%</td>
<td>45%</td>
<td>20%</td>
</tr>
<tr>
<td>Finland</td>
<td>24%</td>
<td>39%</td>
<td>34%</td>
</tr>
<tr>
<td>Spain</td>
<td>54%</td>
<td>38%</td>
<td>31%</td>
</tr>
</tbody>
</table>

Versus:

| Italy     | 74%                                                                             | 71%                                                                             | 36%                                                                             |
| UK        | 82%                                                                             | 66%                                                                             | 36%                                                                             |
| Ireland   | 82%                                                                             | 71%                                                                             | 37%                                                                             |
| Greece    | 88%                                                                             | 58%                                                                             | 39%                                                                             |
The cluster of French, Belgian, Finnish and Spanish drivers tends to be only moderately in favour of government spending more effort in organizing more technical check-ups and tends to be only moderately in favour of giving very much consideration to public transport in planning for the future. Drivers from UK, Italy, Ireland and Greece show an opposite pattern of answers, being more strongly in favour of government undertaking action to test more vehicles and being strongly in favour of giving very much consideration to public transport in our plans for the future.

2.4 General discussion

In this chapter results were presented concerning European patterns of differences in opinions and norms regarding road safety measures and in-car devices. It is important to realize that not all important differences between countries are covered within this chapter. The patterns reviewed in this chapter mainly involved two clusters of 2 to 4 countries that had diverging views on two or three subjects. The present analysis has given us some insight into question which groups of national drivers tend to have similar opinions on a number of issues. This chapter and this discussion give us a broad view on European differences and similarities about road safety.

In the presentation of the results we have focused on the issues that gave rise to patterns of differences in opinion rather than the issues which did not evoke such patterns. It’s now time to give a more balanced view of the total results. A number of question were not (or not very much) involved in the patterning of European differences. These questions dealt with the following issues:

- Government should improve driver training
- Government should stimulate more road safety campaigns
- Penalties for traffic offences should be more severe
- Better public transport is needed
- When planning for the future much consideration should be given to pedestrians
- When planning for the future much consideration should be given to cyclists
- When planning for the future much consideration should be given to motorcyclists
- When planning for the future much consideration should be given to cars
- When planning for the future much consideration should be given to lorries
- European obligation to install third braking light
- Not allow new drivers in Europe to drink before driving
- A device to assist you not to exceed the speed limit
- A distance control system.

It goes too far to say that there is a European consensus on these issues. But in terms of size of differences and the number of diverging countries involved we may say that these issues constitute the least controversial. If policy makers strive for a multi-point programme
Opinions and norms

for a European road safety policy some of the issues just mentioned may be the best
candidates for reaching a strong overall European public support.

Surprisingly, nearly all the questions dealing with the amount of consideration to be given
to different modes of transport are not among the issues that divide European drivers. This is
a surprise since we know that the economic and social problems with transportation are
indeed different in European countries. The format of these questions does not require the
respondents to make a choice between priorities given to transport mode. For instance, the
respondent may answer that very much consideration should be given to cars as well to
cyclists or lorries. It may well be that stronger international differences may arise if drivers
would be obliged to make a choice between priorities given to these transport modes. If
another SARTRE survey will be held in the future, this is certainly a point for reflection.

If we turn our attention once more to European patterns of opinion differences, two issues
stand out most clearly: the different personal norms in regard to personal freedom in drinking-
and-driving and the different personal opinions on the need for improvement of roads. This
finding in fact replicates the outcomes of an earlier analysis of opinion differences in Europe,
where it was found that these two issues dominated the dimensions along which countries
could be ordered (SARTRE, 1994b).

Within EU member states, the opinions on these two issues tend to differ along a North-
South line. Drivers of rather Northerly located EU-states (Sweden, Finland, Germany,
Netherlands, Austria) tend to completely reject any personal freedom in drinking-and-driving
and, at the same time, are not so much in favour of their government undertaking more action
to improve the standards of roads. On the other hand, drivers of Southerly located EU-states
(Italy, Greece, Portugal, Spain) are far more lenient in regard to personal freedom in drinking-
and-driving and are more in favour of government taking steps to improve the standards of
roads.

Thus, within EU the opinions on these two issues tend to go together. However, presumable the mental frame that guides these opinions is very different in each case. Very
likely, the opinions about the need for government to improve the standards of roads are a
reflection of objective road conditions. Indeed, Northern countries like Sweden, Finland,
Germany, Netherlands have a high quality road system. The drivers in these countries
recognize this high quality and as a result will be less enthusiastic about their governments
devoting much effort into even further improvement. The Grecian, Portuguese, Spanish and
Italian drivers may have some less enchanting experiences with some of their roads and
therefore be more inclined to encourage government to undertake more effort in this direction.

The mental frame for the opinions about freedom in drinking-and-driving derives from a
whole different sphere of public life, presumably from more general societal norms regarding
drinking of alcohol and personal autonomy. One well-known social-cultural phenomenon is
that consumption of alcohol in southern (wine-drinking) European countries is part of a more
relaxed lifestyle where alcohol consumption is a natural element of everyday meals. In the
northern European countries, drinking constitutes a more secluded activity separated from the
sphere of everyday life, and done more exclusively for its own purpose.

These differences in drinking culture may affect how people react to information about the
hazards of combining alcohol with driving a car. If alcohol intake is regarded as a normal part
of a daily lifestyle, then general notions or warnings about the health or safety risks of alcohol
may not be taken seriously, or be particularized to fit only certain problem groups (e.g. young people) instead of the general citizenry. Such a kind of thinking may explain why drivers of southern European countries far more lenient than drivers in Northern countries in regard to personal freedom in drinking-and-driving, but tend to be as strict as their Northern counterparts if it comes to the issue of a total alcohol ban for young drivers. It seems to be that the general leniency towards drinking-and-driving tends to disappear when thinking about the alcohol problem is particularized in the direction of special road user group.

In EU, leniency towards drinking-and-driving and high preference need for improvement of roads tend to go together. That this is no intrinsic connection becomes clear when we take into account the results for the non-EU East-European countries. In these countries we find both a low leniency towards drinking-and-driving and a strong call for improvement of the roads.

Besides, the major issues of improvement of roads and personal freedom in drinking-and-driving, there are a number of secondary issues on which groups of European drivers tend to disagree in a cluster-like way. These issues are:

- Personal usefulness of the mobile telephone
- Personal usefulness of the alcohol-meter
- The regular testing of vehicles (in Europe)
- The degree of attention to be given to cars in plans for the future
- The introduction a penalty points system.

The results indicate that the car drivers who tend to agree with one another on the two mentioned major issues, are be divided amongst themselves by a number of these minor issues. For instance, let’s take the general cluster of Southern EU car drivers who tend to agree with one another in being more lenient towards drinking-and-driving. Among this cluster of drivers, there is dissension about the issues of regular European testing of vehicles, European introduction of a penalty points system and the need to consider public transport in future planning. Italy and Greece have a very strong preference that their governments undertake action to test more vehicles and that public transport is very much considered in the future and a moderate preference for the European introduction a penalty points system. On the other hand, The French, Belgian and Spanish drivers tend to be decidedly less enthusiastic about all these measures. It may be that the lack of experience with measures of these type have led Italian and Hungarian drivers to expect very large benefits from them, whereas the experience with these measures in France, Belgium and Spain have led to somewhat more reserved and maybe more realistic down-to-earth attitudes.

Among the group of drivers who tend to agree on absolute rejection of freedom in drinking-and-driving, there is divergence on the issues of the usefulness of the mobile telephone and regular testing of vehicles. The Finnish and Swedish drivers tend to have far more appreciation for the mobile telephone and far less appreciation for regular testing of vehicles than the German, Austrian and Dutch drivers. It’s easy to imagine how the remoteness of some of the Swedish and Finnish landscapes together with sometimes difficult weather conditions may have led to some enthusiasm for the availability of a mobile phone in the car.
Opinions and norms

References


Chapter 3  How can this happen? - Drivers exceed speed limits!

The intention of the described in-depth analysis is to reveal general relations between speeding (exceeding speed limits) and other variables.

3.1 Introduction

Speeding is considered to be the main cause of accidents. Although very often the accident cause is inappropriate speed (related to the very conditions) general speed limits have contributed to a reduction of accidents and casualties. The better the compliance with speed limits in general the more improvement of traffic safety can we expect. The understanding of the habit to of exceed speed limits may be useful for the development of countermeasures against inappropriate speed choice, too.

The described analysis therefore tries to reveal general relations between speeding (exceeding speed limits) and other variables. A similar study has been conducted with SARTRE 1 data on the issue of exceeding the alcohol limit.

This investigation started from the hypothesis, that there are similar relations between speeding and other variables in all countries which participated in SARTRE 2 survey (in the analysis on exceeding the alcohol limit with SARTRE 1 data it has turned out that distinctions between countries were important).

One distinction, however, in connection with speeding was considered to be important. Different types of roads were studies separately. Different analyses were conducted for built up areas, rural roads, expressways and motorways.

3.2 The method and the selection of variables

The method

The method of loglinear analysis was used to describe the relations between the dependent variables (exceeding the speed-limit on a certain type of road) and a set of independent variables (logit models). The advantages of this method have been described by Christ, Brandstätter (1994) in connection with analyses of SARTRE 1 data.

In short words the intention of the analysis can be described as follows: Look for the simplest model which will recalculate the distribution of the dependent variable. The more complex the model you choose, the better the recalculated distribution of the dependent variable will fit to the original data set. The goodness of fit statistics stands for the quality of the model. Probabilities 0.3 and higher indicate well adapted models. So the strategy with this methodology is to find the most simple model which still has a considerable goodness of fit statistics.
Loglinear analysis, however, needs certain qualities of the variables and can only be reasonably applied to sets of variables not more than seven to ten. Therefore a few steps of preparation stand at the beginning.

**Selection of variables**

The set of variables was firstly composed based on theories which try to explain speeding, so sociodemographic, variables, variables on driving experience, attitudes to regulations, variables on vehicle choice, experience with sanctions and some others were included into the set.

Loglinear modelling needs categorical data and modelling is usually more successful if the number of categories is low. Therefore distribution characteristics where an important criterion for selecting variables. Variables where recoded to obtain the desired qualities for analysis (the final table of recoded variables is in the annex)

In order to reduce the set of variables first classical methods of data analysis were used to understand distribution patterns and to pick out the most important variables. Correlation analyses and analyses of variance allowed finally to fix a set of variables.

The set from which all analyses started included the following independent variables:

- rage_g - agegroups
- rq14_e – warning police-controls
- rq13_(1 2) – sanction experience (penalty for speed infringement)
- dq45_(1 2) – engine capacity
- sex(1 2)
- rkilom_d(1 2) – annual mileage
- rq2_b(1 2) – more enforcement of the traffic
- rq8_(1 2) – Others violate speed limits
- q28_b(1 2) – I enjoy driving fast

In first analyses also variables

- rq11_a(1 3) - wished limit in...
- rq46_2(1 4) – power/weight
- q9_(1 3) – speed choice compared to others

have been used, but it turned out that other variables covered the variance better.

**The process of modelling**

For every type of road an attempt was made to explain exceeding the speed limit on this very type of road by variables from the set of independent variables described above.

Attempts to include all variables have not been successful for any type of road. The set of variables has been reduced step by step for every type of road independently. With the reduced set another attempt was made till reasonable models have been obtained.

It turned out that it was possible to find models which explain speeding for any type of road, however, the complexity of the models differs and also the set of variables which allows loglinear modelling differs.
In principle it appears that roads with higher speed-levels allow modelling on tables which take more variables into consideration. With lower speed levels less variables seem to have an impact on speeding.

### 3.3 Results of modelling

The description starts from roads with lower speed levels and continues to roads with higher speed levels. So we come from the simpler models to the more complex ones.

**Built up areas**

It turned out that modelling was only successful if it was based on a small set of variables.

Independent variables in the model:

- Already fined for exceeding the limit
- Warn other drivers for police controls
- Perception that others exceed speed limits
- Age group

The relations between the independent variables and the dependent variable are quite simple (compared to roads with higher speed levels). A satisfying fit of the model can be attained using only the four main effects and three interactions between independent variables - see figure 3.1.

**Figure 3.1: Speeding in built up areas - variables and their impact on exceeding the limit:**
This model has a fit with a probability of 0.29 which already allows reasonable interpretation of the parameters which are printed in the arrows (z-values).

**Direct relations between independent variables and speeding in built up areas:**

Speeding in built up areas is primarily related with the fact if a driver has been fined for speeding. People who have been fined for speeding, say that they sometimes or often exceed the speed limit. Those drivers who do not signal other drivers police speed control traps never or rarely exceed speed limits in built up areas.

A relation between age and speeding in built up areas is almost of the same importance. The younger the drivers are the more often they exceed speed-limits in built up areas. Drivers who exceed speed limits themselves more often think that other drivers exceed speed limits.

**Interactions between several independent variables and speeding in built up areas:**

Interactions between independent variables and their impact on speeding in built up areas are to be understood as follows:

- The fact that younger drivers exceed the speed limit in built up areas is more pronounced if the young driver has the opinion that (also) other drivers frequently exceed speed limits.
- The fact that younger drivers exceed the speed limit in built up areas is more pronounced if the driver has not yet been fined for speeding.
- The fact that younger drivers exceed the speed limit in built up areas is more pronounced in this group of drivers who signal (at least rarely) police speed checks.

**Validity of the speeding model for built up areas with respect to the different countries**

Compared with the analysis on exceeding the alcohol limit (SARTRE 1) it is remarkable that it is possible to find a model which fits on the whole SARTRE 2 data set.

However, it should not be concealed that in spite of this general model there is still a range of differences concerning speeding in built up areas between the countries which have participated in the SARTRE survey. Applying the method of loglinear modelling to samples of single countries would in some cases yield different results. This means that certain circumstances in some countries would change the model in the sense that it would be improved according to the special conditions in the very country. These special conditions are especially certain distribution patterns of the variables which have been included in the models.

The following figure 3.1a shows the European average of the distribution of the dependent variable on the x-axis and the residuals of the independent variables on the y-axis. The position of each country in relation to the average indicates in which respect special conditions in the very country must be considered.
The figure shows on the x-axis that the percentage of people who say that they exceed the speed limit in built up areas ranges from about 11 percent in Switzerland and Sweden to about 38 percent in Italy, the average in the total sample being about 23 percent.

On the Y-axis we see that the residuals of the independent variables for the Netherlands, Hungary, Slovenia and the Czech Republic are quite close to the total, residuals for Spain and Greek being quite different.

The closer the dot of the country to the "Total" the better the described model will fit to the data of the country. Concerning built up areas we have to consider that specific models for the countries Spain, Portugal, Italy, Switzerland, Sweden and Greek will differ from the described model.

**Rural roads**

Models based on a larger set of variables (which for example turned out to be appropriate for motorways) did not achieve an acceptable GOF-statistics, so modelling ended again with a small sets of variables.
Based on several sets of variables finally acceptable models could be structured. A very simple model turned out to be very good, it included the same set of variables which proved to be appropriate for built up areas.

**Variables in the final model:**
- Already fined for exceeding the limit
- Warn other drivers for police controls
- Perception that others exceed speed limits
- Age group

However it is remarkable that also other options to explain speeding on rural roads yield acceptable models, see the following description before the final model will be presented.

**Excurs – models including vehicle variables and models including sex as an independent variable**

To check for the impact of engine capacity (45) several models including this variable have been analysed. It is possible to structure an appropriate model (GOF=0.21), however the interactions to be included are so complex that a reasonable interpretation is not possible any more.

To check for the impact of sex also several models including this variable have been considered. It was not possible to come to acceptable models adding sex to the above mentioned four independent variables. However it was possible to structure an appropriate model with the following set of variables:
- Already fined for exceeding the limit
- Warn other drivers for police controls
- Age group
- Sex

The variable sex thus replaces the variable »perception that others exceed speed limits», this means a shift from social comparison to genetic determinants. The best model with those variables attains a considerable fit of 0.55. However this model includes also rather complex interaction terms which cannot be interpreted reasonable.

Finally it can be concluded that speeding on rural roads is best explained by experience of sanctions and perception of other drivers. The appropriate model is labelled the *comparative sanction model* (Figure 3.2). This model attains a considerable fit and thus can explain speeding on rural roads quite satisfying.

**Direct relations between independent variables and speeding on rural roads:**

Speeding on rural roads is primarily related with the behaviour of warning other drivers from police speed checks. Drivers who do not signal others police speed checks do not exceed limits themselves and those who signal checks do exceed at least sometimes.

People who have been fined for speeding say themselves that they sometimes (up to always) exceed speed limits on rural roads. Also on rural roads a relation between age and speeding is important. Younger drivers exceed speed limits more often. Drivers who exceed speed limits themselves more often think that other drivers exceed speed limits often or always.
Interactions between several independent variables and speeding on rural roads:

Interactions between independent variables and their impact on speeding on rural roads are to be understood as follows:

• The fact that younger drivers exceed the speed limit on rural roads is more pronounced if the driver has not yet been fined for speeding.

• The fact that younger drivers exceed the speed limit on rural roads is more pronounced in the group of young driver who have the opinion that (also) other drivers often or always exceed speed limits.

The complex interaction between speeding, age, sanction experience and warning others from speed controls can be understood as follows:

• The middle aged group (40-54 years old) and the group of older drivers (older than 55) show special behaviour patterns - in the middle aged group those who have not yet been fined more often warn others from police speed checks (co-operation against the police - those drivers who have not been fined are confident that this will make sense). In the group of older drivers those who have been fined and now do not exceed speed limits are those who warn from police speed checks (probably - those who have become convinced and now try to convince those who are still speeding).

Validity of the speeding model for rural roads with respect to the different countries

As already indicated in connection with the speeding model for built up areas it is also necessary to discuss the validity of the speeding model for rural roads with respect to different countries. Certain distribution patterns of variables in certain countries may cause
different models if this kind of loglinear analysis would be applied to the variable set of some single country.

The following figure 3.2a shows the European average of the distribution of the dependent variable on the x-axis and the residuals of the independent variables on the y-axis. The position of each country in relation to the average indicates in which respect special conditions in the very country must be considered.

**Figure 3.2a: Plot of the countries – distance from average distribution from set of independent variables and from distribution of dependent variable – Rural roads model**

The figure shows on the x-axis that the percentage of people who say that they exceed the speed limit on rural roads ranges from about 20 percent in Ireland to about 50 percent in Poland and Portugal, the average in the total sample being about 39 percent.

On the Y-axis we see that the residuals of the independent variables for Hungary, Finland, Slovakia and Spain are quite close to the total, residuals for Poland and Germany being quite different.

The closer the dot of the country to the "Total" the better the described model will fit to the data of the country. Concerning rural roads we have to consider that models specific for the countries Poland, Portugal, Greek, Czech Republic, Ireland and Germany will differ from the described model.
Expressways

Modelling based on large sets of variables have not yielded satisfying results for speeding on Expressways. More successful was the attempt to start from simpler models - as also developed for built up areas.

Any attempts to include mileage or sex in the variable set brought no results. If engine capacity has been included in the set, only very complex models with very high interactions brought satisfying GOF-statistics. Finally only the four independent variables have been included in the model, which have also been included in the models for built up areas and for rural roads:

**Variables in the model:**
- Already fined for exceeding the limit
- Warn other drivers for police controls
- Perception that others exceed speed limits
- Agegroup

This means that mileage, sex and engine capacity which have turned out to have a systematic impact on speeding on motorways do not have a systematic effect on speeding on expressways. The variables which are important for speeding on expressways and their impact on speeding on expressways are shown in figure 3.3.

The model has a satisfying goodness of fit with a probability of 0.501 which allows reasonable interpretation of the parameters (z-values printed on the arrows).

**Direct relations between independent variables and speeding on expressways:**

Speeding on expressways is primarily related with the fact if a driver has been fined for speeding. People who have been fined for speeding, say that they sometimes or often exceed the speed limit.

Those drivers who do not signal other drivers police speed controls never or rarely exceed speed limits on expressways. A relation between age and speeding on expressways is almost of the same importance. The younger the drivers the more often they exceed speed-limits on expressways. Drivers who think that other drivers exceed speed limits often or always exceed speed limits themselves more often.

**Interactions between several independent variables and speeding on expressways:**

Interactions between independent variables and their relation to speeding on expressways are to be understood as follows:

- The fact that younger drivers exceed the speed limit on expressways is more pronounced if the young driver has the opinion that (also) other driver often or always exceed speed limits, or in other words - the concern that other drivers exceed speed limits is more related to speeding in the group of younger drivers.
- Warning from speed controls is over represented in the group of speeding drivers who have not yet been fined for speeding.
Figure 3.3: Speeding on expressways - variables and their impact on exceeding the limit:

Validity of the speeding model for expressways with respect to the different countries

As already indicated in connection with the speeding models for built up areas and rural roads it is also necessary to discuss the validity of the speeding model for expressways with respect to different countries. Certain distribution patterns of variables in certain countries may cause different models if this kind of loglinear analysis would be applied to the variable-set of some single country.

The following figure 3.3a shows the European average of the distribution of the dependent variable on the x-axis and the residuals of the independent variables on the y-axis. The position of each country in relation to the average indicates in which respect special conditions in the very country must be considered.

The figure shows on the x-axis that the percentage of people who say that they exceed the speed limit on expressways ranges from about 36 percent in Ireland to about 66 percent in Portugal and Sweden, the average in the total sample being about 48 percent.

On the Y-axis we see that the residuals of the independent variables for Slovenia, Slovakia, Belgium and Ireland are quite close to the total, United Kingdom, Poland and Germany having the greatest distance.

The closer the dot of the country to the "Total" the better the described model will fit to the data of the country. Concerning expressways we have to consider that models specific for the countries United Kingdom, Sweden, Poland and Germany will differ from the described model.
**Motorways**

For those roads with the highest speed levels a general model for exceeding the speed limit was found which includes a greater set of variables.

**Variables in the model:**
- Already fined for exceeding the limit
- Warn other drivers for police controls
- Perception that others exceed speed limits
- Sex
- Agegroup
- Engine capacity of car
- Mileage (kilom)

So from those variables which have been considered of potential relevance for speeding only two variables have been excluded. Previous modelling turned out that favour for more enforcement of the traffic and the statement that a person enjoys driving fast have no relevant impact on speeding on motorways.
The remaining seven variables have an impact on speeding and the impact can be described with a model which does not need higher interaction terms than two way between the variables.

Figure 3.4 shows the seven main effects on speeding on motorways and the seven interactions between independent variables which are also relevant for speeding on motorways.

**Figure 3.4: Speeding on motorways - variables and their impact on exceeding the limit:**

The model attains a considerable fit with a probability of 0.832 which means a very high quality of the model.

**Direct relations between independent variables and speeding on motorways:**

Interpretation of the main effects (according to rank):

Exceeding speed limits on motorways is closely related with the habit of signalling other drivers police speed control. Drivers who exceed speed limits more often (rarely to always) signal speed controls.

Speeding on motorways is also closely related with the fact if a driver has been fined for speeding. People who have been fined for speeding, say that they sometimes or often exceed the speed limit.

A relation between age and speeding on motorways is almost of the same importance. The younger the drivers the more often they exceed speed-limits on motorways.

Driver with an annual kilometrage above the average (within the country) exceed speed limits on motorways more often.

Divers who drive cars with higher engine capacity exceed limits on motorways more often.
Main areas

Male drivers exceed speed limit more often on motorways than female drivers.

Drivers who think that other drivers exceed speed limits exceed speed limits themselves more often on motorways.

Interactions between several independent variables and speeding on motorways:

Interactions between independent variables (again ranked by importance) and their relation to speeding on motorways are to be understood as follows:

The effect of the engine capacity of the car (higher capacity - more speeding) is of less relevance if drivers think that other drivers conform with speed limits - or in other words - the opinion that others brake speed limits and a high motorisation are more related with speeding on motorways.

In this group of drivers who's annual kilometrage is lower than average the effect that older people do not exceed speed limits is more pronounced than in the group of drivers who drive more than average.

The fact that younger drivers exceed the speed limit on motorways is more a matter of male drivers.

The fact that younger drivers exceed the speed limit on motorways is more pronounced if the young driver has the opinion that (also) other drivers often or always exceed speed limits, or in other words - the concern that other drivers exceed speed limits is more related to speeding in the group of younger drivers.

The fact that speeding is related with higher engine capacities is more pronounced in the group of younger drivers and less in the group of older drivers.

The link between speeding and the habit of warning other driver from police speed controls is more common in the group of drivers who do not have high powered cars. People who speed and do not warn others are usually drivers who have high engine cars (those who do not care for money, those who are in competition with all people...?).

The fact that drivers who drive more than average exceed speed limits more often is clear in this group of drivers who has not been fined. (This means that prosecution of speed offences can also alter the behaviour of frequent drivers).

Validity of the speeding model for motorways with respect to the different countries

As already indicated in connection with the speeding models for other types of roads it is also necessary to discuss the validity of the speeding model for motorways with respect to different countries. Certain distribution patterns of variables in certain countries may cause different models if this kind of loglinear analysis would be applied to the variable-set of some single country.

The following figure 3.4a shows the European average of the distribution of the dependent variable on the x-axis and the residuals of the independent variables on the y-axis. The position of each country in relation to the average indicates in which respect special conditions in the very country must be considered.

The figure shows on the x-axis that the percentage of people who say that they exceed the speed limit on motorways ranges from about 34 percent in Slovakia and Hungary to about 75 percent in Portugal, the average in the total sample being about 52 percent.
On the Y-axis we see that the residuals of the independent variables for Slovenia, United Kingdom, Finland, Italy and Spain are quite close to the total, Portugal, Germany, Austria and Slovakia having the greatest distance.

The closer the dot of the country to the "Total" the better the described model will fit to the data of the country. Concerning motorways we have to consider that models specific for the countries Portugal, Czech Republic, and Slovakia will differ from the described model.

**Figure 3.4a: Plot of the countries – distance from average distribution from set of independent variables and from distribution of dependent variable – Motorway model**

![Graph showing the distances of countries from the average distribution of independent and dependent variables for Motorway model](image)

### 3.4 Conclusions

Cultural differences have less impact on speed offences than on alcohol offences.

With increasing road hierarchy the number of variables which influence speeding increases.

The key variables which are relevant for speeding on any kind of road are:

- Already fined for exceeding the limit
- Warn other drivers for police controls
- Perception that others exceed speed limits
Main areas

Agegroup

- This selection of variables shows on the other hand the minor importance of other variables. No important relations were found in complex modelling between speeding and »in favour for more enforcement of the traffic« and »I enjoy driving fast«. So these attitudes have less impact than the experience of enforcement, habits in warning from police checks, age and the perceived speed behaviour of others (normative beliefs).

- Sex, engine capacity of car and annual kilometrage gain impact on motorways where higher speeds are permitted. So the influence of the car just starts at higher speed levels.

- Sex shows to have some relation to speeding - not only on motorways - however normative beliefs (perceived speed of others) has more influence than sex, and this influence is direct.

- These results prove that speed behaviour is not heavily determined by facts that could not be changed, much more do these results show keys how to influence speed behaviour. Influencing social norms and beliefs, sophisticated enforcement and fines are promising ways to reduce speeding. Certain age groups, however, will remain problem groups.

- A promising key to prevent speeding on motorways would be a limitation of engine power of cars.
Annex:

List of variables and documentation of recoding:

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<th>1st recoding</th>
<th>description of last (2nd) recoding</th>
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<td>rkilom_d</td>
<td>6</td>
<td>2</td>
<td>2 (over / under Median / country)</td>
</tr>
<tr>
<td>q48_2</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>q44</td>
<td>4</td>
<td>2</td>
<td>2 (1,2=1)(3,4=2)</td>
</tr>
<tr>
<td><strong>Vehicle</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q45</td>
<td>4</td>
<td>2</td>
<td>2 (1,2=1)(3,4=2)</td>
</tr>
<tr>
<td>Q46_2</td>
<td>4</td>
<td>2</td>
<td>Highways (1=1)(2,4=2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rural Roads (1-3=1)(4=2)</td>
</tr>
<tr>
<td><strong>Acceptance rules</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q2_b</td>
<td>5</td>
<td>3</td>
<td>3 (1,2=1)(3=2)(4,5=3)</td>
</tr>
<tr>
<td>Q3_c</td>
<td>5</td>
<td>3</td>
<td>3 (1,2=1)(3=2)(4,5=3)</td>
</tr>
<tr>
<td>Q4_d</td>
<td>6</td>
<td>2</td>
<td>2 (1-3=1)(4-6=2)</td>
</tr>
<tr>
<td>Q14_e</td>
<td>6</td>
<td>2</td>
<td>2 (1=1)(2-6=2)</td>
</tr>
<tr>
<td>Q27_b</td>
<td>4</td>
<td>2</td>
<td>2 (1,2=1)(3,4=2)</td>
</tr>
<tr>
<td>Q31_b</td>
<td>4</td>
<td>2</td>
<td>2 (1,2=1)(3,4=2)</td>
</tr>
<tr>
<td>Q11_a</td>
<td>4</td>
<td>3</td>
<td>2 (1,2=2)(3,4=3)</td>
</tr>
<tr>
<td>Q11_b</td>
<td>4</td>
<td>3</td>
<td>2 (1,2=2)(3,4=3)</td>
</tr>
<tr>
<td>Q11_c</td>
<td>4</td>
<td>3</td>
<td>2 (1,2=2)(3,4=3)</td>
</tr>
<tr>
<td><strong>Emotionality</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q28_b</td>
<td>4</td>
<td>2</td>
<td>2 (1,2=1)(3,4=2)</td>
</tr>
<tr>
<td><strong>Perception of others</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q8</td>
<td>6</td>
<td>2</td>
<td>2 (1,2,3=1)(4,5,6=2)</td>
</tr>
<tr>
<td>Q9</td>
<td>5</td>
<td>3</td>
<td>3 (1,2=1)(2=3)(4,5,6=3)</td>
</tr>
<tr>
<td><strong>Sanction-experience</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q12</td>
<td>6</td>
<td>3</td>
<td>3 (=1)(2,3=2)(4,5,6=3)</td>
</tr>
<tr>
<td>Q13</td>
<td>3</td>
<td>2</td>
<td>2 (1=1)(2,3=2)</td>
</tr>
</tbody>
</table>
Chapter 4  The main areas for road safety measures: alcohol, seat belts and speed

A study of the reactions of European drivers to the three golden rules

The purpose of this study is, on the basis of the SARTRE 2 survey, to establish a typology of European drivers with reference to the three main areas for safety measures. The ‘three golden rules’ are complying with speed limits, wearing a seat belt at all times and not drinking and driving. The method used (multiple correspondence analysis built on variables which characterise the three golden rules) allows to identify the factors which determine behaviours and on this basis characterise groups of drivers.

4.1 Methodology

The basic data set contains 20,725 persons from 19 European countries, each country providing a sample of at least 1,000 persons who are representative for the driving population. The questions they were asked cover six main topics: opinions about measures to improve road safety measures, the attitudes and behaviours of drivers in relation to speed, seat belt wearing and alcohol consumption, European harmonisation and drivers' knowledge of road safety rules and finally there was a set of questions which dealt with socio-occupational matters.

The multiple correspondence method used allows studying a population of individuals through qualitative variables, which are obtained from their answers to questions. In concise terms, this method determines the factorial plans on which the cloud of data points is projected most accurately, i.e. the planes on which projection best conserves the distances between the variables. Multiple correspondence analysis is an analysis of individuals based on categories (male people less than 25 years old, etc.) The closer the distribution profiles for all variables items of two groups, the more these groups resemble each other. This type of analysis distinguishes between active variables (to be explained) and supplementary (or explanatory) variables. Active variables are used in order to determine the best projection space and the explanatory variables are then projected on this.

How does one read a two-dimensional projection graph? The origin is the centre of gravity of the observations. The two axes correspond to the directions on which the distances between points are the least distorted. They are statistically independent from each other. The plotted points are the projections on the graph of the various categories of analysed variables. Two neighbouring points represent positively correlated categories. Two points, which are in opposite positions with respect to the origin, are negatively correlated. Two points, which are at right angles to each other with respect to the origin, belong to independent categories. A point close to the origin is a majority position; one distant from the origin is a minority position.

If the factorial planes are calculated such that the projected variables are subjected to minimum distortion, the representational quality of each must be measured. In the case of active variables (to be explained), we can use their contribution to the determination of the
axes for this purpose. If their contribution is too small, they will be eliminated from analysis. Conversely, these contribution criteria allow us to characterise each axis based on certain variables. The significance of the supplementary variables is assessed with reference to the square of the cosine of the angle of projection: the higher this value, the more the projection will reflect their spatial position. In more direct terms an active variable with a small contribution and an illustrative variable with a low squared cosine value add too little information to the study of the investigated behaviours to be included in the analysis.

The typology we are trying to produce is based on the three golden rules and the characteristic variables of these will perform the function of active variables. Different 'zones' of behaviour will be revealed. By projecting supplementary variables (Socio-occupational group, country, etc.) it may be possible to discover a typology with reference to these three golden rules.

The active variables, which have been used for this analysis, corresponded to the following questions:

<table>
<thead>
<tr>
<th>Comply with speed limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q7. Compared to other drivers, do you think your driving is...dangerous?</td>
</tr>
<tr>
<td>much more</td>
</tr>
<tr>
<td>Q8. How often do you think other drivers break speed limits?</td>
</tr>
<tr>
<td>Never</td>
</tr>
<tr>
<td>Q9. Compared with other drivers, do you generally drive...? (...than average speed)</td>
</tr>
<tr>
<td>much faster</td>
</tr>
<tr>
<td>Q10. In general, how often do you drive faster than the speed limit on the following types of road?</td>
</tr>
<tr>
<td>a- Motorways</td>
</tr>
<tr>
<td>Never</td>
</tr>
<tr>
<td>Q11. Compared to the present limits, what do you think the speed limit should be...?</td>
</tr>
<tr>
<td>a- …in built-up residential areas</td>
</tr>
<tr>
<td>lower</td>
</tr>
<tr>
<td>Q12. On a typical journey, how likely is it that you will be checked for speed?</td>
</tr>
<tr>
<td>Never</td>
</tr>
<tr>
<td>Q13. In the last three years, have you been fined, or punished in any other way, for breaking the speed limit?</td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Always wear seat belt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q15. Does the car that you drive most often have seat belts fitted?</td>
</tr>
<tr>
<td>only in the front</td>
</tr>
<tr>
<td>Q16. When driving this car in the following situation, how often do you wear the seat belt in making a</td>
</tr>
</tbody>
</table>
Do not drink too much before driving

Q19. In general how many days per week do you drink alcoholic beverages?

<table>
<thead>
<tr>
<th>Most</th>
<th>5 to 6</th>
<th>3 to 4</th>
<th>1 or 2</th>
<th>&lt;1</th>
<th>Never</th>
<th>[DK]</th>
</tr>
</thead>
</table>

Q20. In general, when you are drinking, how much alcohol do you typically drink…? 

<table>
<thead>
<tr>
<th>__ __</th>
<th>Units of alcohol</th>
</tr>
</thead>
</table>

Q21. How many days per week do you drive after drinking even a small amount of alcohol?

<table>
<thead>
<tr>
<th>Most</th>
<th>5 to 6</th>
<th>3 to 4</th>
<th>1 or 2</th>
<th>&lt;1</th>
<th>Never</th>
<th>[DK]</th>
</tr>
</thead>
</table>

Q22. Over the last week, how many days did you drive, when you may have been over the legal limit for drinking and driving?

<table>
<thead>
<tr>
<th>Most</th>
<th>5 to 6</th>
<th>3 to 4</th>
<th>1 or 2</th>
<th>&lt;1</th>
<th>Never</th>
<th>[DK]</th>
</tr>
</thead>
</table>

Q23. In general, when you are drinking and driving afterwards, what is the maximum quantity of alcohol that you drink…?

<table>
<thead>
<tr>
<th>__ __</th>
<th>Units of alcohol</th>
</tr>
</thead>
</table>

Q24. People have different opinions about what the legal limit should be. Which of the following statements best matches your opinion. Do you think that drivers should be allowed to drink …?

<table>
<thead>
<tr>
<th>…no alcohol at all</th>
<th>…less alcohol than at present</th>
<th>…as much alcohol as at present</th>
<th>…more alcohol than at present</th>
<th>…as much as they want</th>
<th>[DK]</th>
</tr>
</thead>
</table>

Q25. In the last three years, have you been fined, or punished in any other way, for drink-driving?

<table>
<thead>
<tr>
<th>No</th>
<th>Yes, Only fined</th>
<th>Yes, Fined and/or other penalty</th>
<th>[DK]</th>
</tr>
</thead>
</table>

Q26. On a typical journey, how likely is it that you will be checked for alcohol?

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
<th>Always</th>
<th>[DK]</th>
</tr>
</thead>
</table>

Main areas
4.2 Factors which underlie reactions in relation to the three major areas for measures

The inertia of the cloud of points is distributed over different factorial planes. Each axis represents a proportion of the inertia of the cloud. Only the factorial plane, which is determined by the two first axes, i.e. that which best reflects the differences between the positions of respondents, has been retained for analysis. The inertia of the subsequent axes is insufficient, the various variables being poorly represented.

We now need to determine which are the active variables, which play a dominant role in determining which axes are selected.

**First dimension**

The variables, which concern speed and alcohol, are involved in the formation of the first axis. The questions which are the best represented on this axis are those which involve opinions and behaviours in relation to speed limits and drink driving (respectively questions 9, 10, 11, 13, and questions 19, 20, 21, 22, 23 - see tables above). There is therefore a clear opposition on the first axis between the following behaviours and opinions:

<table>
<thead>
<tr>
<th>Compliant with measures concerned with speed</th>
<th>Reservations about and opposed to measures concerned with alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-drinkers</td>
<td>Risk-taking behaviour</td>
</tr>
</tbody>
</table>

**Second dimension**

Axis 2 is characteristic of behaviours and opinions with regard to wearing seat belts, which appear through questions (17) and (16) which are very well represented. Those with unequipped vehicles are also well represented (question 15). The following oppositions are thus present on this second dimension:

<table>
<thead>
<tr>
<th>Opposed to wearing seat belts (= pointless)</th>
<th>Wear seat belts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unequipped</td>
<td></td>
</tr>
</tbody>
</table>

We can also see a clear link between stated behaviours and opinions. Those persons who state that they never wear seat belts consider that they are pointless. Here we can observe some of the major findings of SARTRE 1. While there is a link between behaviours as regards alcohol and speed, for example the persons who do not drink and the persons who comply with speed limits are the same, seat belt wearing is independent of speed and alcohol related items.

7 zones have been identified on the first factorial plane (Figure 4.1):

- Alcohol consumption, driving after drinking
- Non-compliance with speed limits, risk-taking behaviour
- Compliance with the rules of caution and road safety
- Compliance with speed limits
- Not drinking alcohol
- In favour of seat belts
- Against seat belts, unequipped

When we consider the two principle dimensions, we can observe, as we did when the results from the first survey were analysed, that the principle explanation for the differences in the position of drivers is attitude towards the law, in this case road traffic regulations. Thus on one side we have oppositions to speed limits, legislation against driving under the influence of alcohol and also to seat belts, and on the other in contrast we have attitudes and behaviours which comply with the legislation. A slightly poorer explanation involves technical sophistication in terms of vehicle accessories.

**Figure 4.1: The principle determinants of attitudes towards the main road safety measures**

We now project the explanatory (supplementary) variables onto the first factorial plane and, characterise European drivers according to their age, sex, educational level, driving experience, country, etc.
4.3 The characteristics of drivers

Compliance with speed and alcohol legislation is linked to the age of drivers. The older the driver the more likely he or she is to comply with these measures and, conversely, the younger the driver the more likely he or she is to oppose them.

Sex is also an influential factor, women being much more in favour of complying with these measures than men comply. These two major trends are clearly highlighted if we create a variable that combines age and sex. In the case of women, all the centres of gravity for age classes are on the side of compliance with measures, whereas for men only the age class of over 55 is in this region (Figure 4.2).

Marital status also plays a role. The situations are distributed along the first dimension and range from unmarried status on the side of opposition to measures to widowhood on the side of approval.

The variables of age, sex and marital status do not project onto the characteristic zones for behaviours as regards seat belts. Seat belt wearing is therefore not dependent on these criteria.

Figure 4.2: Demographic characteristics and attitudes regarding the main road safety measures

If we compare attitudes towards safety measures with drivers’ occupation two zones appear:

- The zone of systematic acceptance of speed limits and abstinence from alcohol which is characteristic of housewives or retired persons.
• The zone of opposition to alcohol measures and speed limits which contains senior executives or manual workers.

We can thus perceive an opposition between persons who do not work and who are generally located in a region of compliance as regards the three measures and "economically active persons" who are usually opposed to them.

The effect of income is not very marked. There is a minor contrast between individuals with high incomes who are in favour of wearing seat belts and low income groups who are more likely to comply with other road safety measures (alcohol and speed). It should be noted that if we project the co-ordinates of the income classes the centre of gravity of the classes is projected onto the region of rejection of speed and alcohol related measures.

As regards zone of residence, size of town has no influence; all the items for this variable are projected in a zone near the origin. However, the type of environment in which drivers live is more influential; large cities predispose to non-compliant behaviour as regards speed limits and legal limits for alcohol when driving.

4.4 Mobility indicators and the main road safety measures

Opinions concerning the three principal measures vary with the annual distance driven. High annual mileage is associated with risk-taking behaviour and a certain lack of enthusiasm about wearing a seat belt, whereas a low annual mileage is associated with cautious driving and compliance with road safety regulations. Transition from one extreme to the other is a gradual process as is shown by the path, which has been plotted, on the graph (Figure 4.3).

Seat belt wearing is strongly linked to the level of insurance. A vehicle that is uninsured or insured to only the minimum level required by law tends to be owned by a driver who is opposed to legal measures concerning the wearing of seat belts. In contrast, the zone of seat belt wearing corresponds to drivers with third-party insurance.

Those who drive company cars and leased vehicles are contrasted with other drivers on the one hand by their lower compliance with drink-driving measures and on the other by greater risk taking. Those who drive a vehicle, which is owned by another member of their family or a friend, are characterised by greater caution.

Those who drive cars with small or medium engine capacities are against wearing seat belts. Owners of vehicles of more than 1300 cc are considerably more in favour of wearing seat belts, but comply less with speed limits.

Elderly and very young drivers comply with regulations. On the other hand, drivers with between 3 and 10 years driving experience are slacker as regards the rules of caution and road safety.
4.5 Harmonisation at European level

The acceptance or refusal of measures, which are part of a European harmonisation process, is clearly linked to stated behaviours and opinions. Individuals who comply with the rules of caution and road safety state for example that they are very much in favour of the introduction of the penalty points licence, prohibiting young drivers from driving after drinking and stricter regulations as regards the maximum speed of vehicles. Conversely, a failure to comply with speed limit and alcohol regulations is associated with a desire for regulations to be less strict, in particular with respect to technical check-ups for vehicles, the third braking light and introduction of the penalty points licence. It is therefore interesting to compare these results with the typology for each country. Portugal, Switzerland and to a lesser degree Italy are characterised by greater reservations about the introduction of stricter regulations in the context of harmonisation.

4.6 International differences regarding the main road safety measures

The contrasts between countries are apparent primarily in stated attitudes and behaviours about seat belts and seat belt wearing. The countries, which are most favourable to wearing
Main areas

seat belts, are Finland, Sweden, the United Kingdom and Germany. The countries least in favour are the Czech Republic, Slovakia, Greece, Italy and Hungary and to a lesser degree Belgium, Spain and Poland. This tendency was already noted when the results from the first survey were analysed.

International disparities are slightly less marked when it comes to stated attitudes and behaviours about speed and speed limits and drinking and driving. Switzerland and Portugal are near the zone of non-compliance for alcohol regulations. The Irish Republic is in contrast characterised by a high degree of compliance as regards the rules of caution and speed limits. If we look at the positions in the previous phase of the survey, the position of the Netherlands and Portugal has worsened in that they have become more tolerant of excess speeding and drink driving. Hungary has improved its position by becoming more compliant with drink-driving legislation, but interpretation needs to be cautious here in view of the zero limit for alcohol. The position of the new countries is largely as one would expect, Greece is near Italy and Finland is a little better than Sweden. Slovenia seems to be near to the average position. Finally, Poland is positioned in a relatively good quadrant for compliance with speed limits and drink-driving regulations (although here too the zero limit should be taken into account) but is rather unfavourable to seat belt wearing.
4.7 Regional differences

In this section, we shall examine regional differences on a country-by-country basis. In each case we will compare the average position of the country to that of all countries (see Figure 4.4) and the average position of the regions in the country to its national point (for practical reason we kept the vernacular name of regions). The relative position of points will be interpreted as it has been for countries, in order to reveal the specific characteristics of each region. The range of dispersion of regional points around the national point, which provides a means of assessing the extent of differences, is then given. No regions have been considered in the case of Ireland and Slovenia. The same applies to Slovakia, but we have put this on the same graph as the Czech Republic.

Austria

This country is mostly in favour of seat belts and occupies a medium position as regards speed and alcohol regulations, with a slight tendency to opposition. The main contrast relates to speed and alcohol where the West and Ost regions tend to be compliant and the Wien region tends towards offending. The differences are quite marked.

Belgium

This country is in a central position in our analysis, which means that it does not differ much from the average. Regional differences relate mainly to seat belt wearing. Vlaanders is more in favour than the rest, in more careful positions, and Brabant less so with more risky attitudes. Wallonie is in an intermediate position. The differences are medium-sized.

Finland

This country is mostly in favour of seat belts and is in a medium position compared to the rest for speed and alcohol. In contrast to Belgium, regional differences only relate to speed and alcohol. Muu Suomi is more in favour and Lounais-Suomi less in favour of these regulations. The difference is quite marked.
France

This country is mostly in favour of seat belts and is in a medium position as regards speed and alcohol but with a slight trend towards opposition. There are very few regional differences as regards seat belts, the Nord Pas de Calais region is slightly more in favour and Mediterranée slightly less so. There are major differences as regards speed and alcohol legislation: the Nord Pas de Calais and Mediterranée regions are the most favourable, whereas Centre Est and Ile de France are the least. Differences are marked.

Germany

This country is mostly in favour of seat belts and is in a medium position as regards speed and alcohol. As regards seat belt wearing, we find clear opposition in the town of Hamburg while the Saarland supports this measure the most. For the dimension of speed and alcohol legislation, Thüringen, Brandenburg and Sachsen Anhalt are on the side of approval, while Bayern, Berlin and Schleswig Holstein are on the side of disapproval. Differences are marked.

Greece

This country is more against seat belts, has them fitted to fewer vehicles, and is more inclined to take risks than the average. There is a clear contrast between Boreia, which is less against wearing seat belts, and Notia, which is more against. The Kentrikh region is more strongly opposed to speed and alcohol regulations than the other two. Differences are medium-sized.
**Italy**

This country is more strongly against seat belts, has them fitted to fewer vehicles, and is more inclined to take risks than the average. In this context, Lombardia and the Nord-Est seem slightly more in favour of seat belt wearing. Drivers in the Southern regions (Campania, Sicilia and Sardegna) tend to comply with speed limits more and drink alcohol and drink-and-drive less often than their fellow-countrymen from the Centre and North (i.e. the Nord-Est, Emilia-Romagna and Nord-Ovest). There are considerable differences between the extremes.

**The Netherlands**

Compared to the average this country is rather more in favour of seat belts and is in a careful position. In this context, we found that drivers from the Oost region are less favourable to seat belts while drivers from the Noord appear to be more in favour. As regards alcohol and speed, both the Oost and Noord appear to comply more with rules, while drivers from the Zuid and West regions tend to be in opposition. Differences are of medium size.

**Portugal**

This country is slightly more inclined to break speed limits and drink and drive than the average. In this context, drivers in the Sul tend to comply with speed limits more and drink alcohol and drink-and-drive less often than the drivers from the other region, the Norte. The differences are not marked.
Spain

This country appears to comply more with speed limits, to drink-drive less and to be slightly less opposed to seat belts than the average. The Centro, Nordeste and South regions are more opposed to seat belts, while the Noroeste is less so. The Est and Nordeste regions are more favourable to speed and alcohol measures, whereas Madrid and the South are less in favour. The differences are quite marked.

Sweden

This country is mostly in favour of seat belts and is in a medium position as regards speed and alcohol in comparison with the average. The Noorland region is slightly less in favour of seat belts than the Gotaland. As regards speed and alcohol, the Noorland behaves better than average and the Svealand worse. The differences are not very marked.

United Kingdom

This country is mostly in favour of seat belts and is in a medium position for speed and alcohol in comparison to the average. London and Northern Ireland are less inclined to support seat belts, while the North, East Anglia, Scotland and Wales are more inclined to do so. For speed and alcohol, the East Midlands, South West and Yorkshire-Humberside tend towards offending behaviour, whereas East Anglia West Midlands and Scotland comply more with these regulations. The differences are marked.
Czech Rep. & Slovakia

These countries are more against seat belts, tend to have them fitted to fewer vehicles and have more risky behaviour than the average. In the Czech Republic the drivers in the Moravia region tend to comply with speed limits more and to drink and drink-and-drive less often than the drivers from the other region, Cechy. The drivers from the Slovak Republic are a little more opposed to seat belts but have similar views on the other questions. The differences are small.

Hungary

This country appears to be more sober and more opposed to seat belts than the average. The Kelet region is more compliant with speed and alcohol measures while Budapest is less so. The Nyugat region is more in favour of seat belts than the other two. Differences are of medium size.

Poland

This country appears to be more compliant with speed limits, to drink-and-drive less and to be slightly less opposed to seat belts than the average. The Poludniowe region appears to be a little more favourable to seat belts than the others are. Poludniowe, Polnocne and Zachodnie are more compliant as regards speed and alcohol while the Centralne and, in particular; the Wschodnie regions are the least inclined to obey safety rules. The differences are marked.
Switzerland

This country is very strongly in favour of seat belt wearing, but tends to be more strongly opposed to speed and alcohol regulations than the average. As regards seat belt wearing, Deutsche Schweiz is more in favour while the Suisse Romande is less so. Svizzera Italiana is slightly more against speed and alcohol regulations than the two other regions. Differences are quite marked.

As a general comment, the largest urban areas, for example Berlin, Ile de France (including Paris), Wien, Budapest, London, Madrid, Lazio (with Rome), are often located to the left of the mid-point for the country. This means that drivers in large urban areas are less in favour of speed and alcohol regulations than those in the rest of their respective countries.

4.8 Concerns about social problems and the rules

Questions of a general nature relate to different topics of concern, risk and danger. Thus, individuals who are not very worried about social problems such as crime, pollution, traffic accidents or unemployment, are characterised by risk-taking behaviour and non-compliance with road safety rules (in particular seat belt wearing). In contrast, those persons who are very concerned about these social problems are characterised by compliance with the rules. There appears however to be a consensus about the standard of medical care.

Natural links are also formed as regards opinions about the measures that should be taken to improve road safety and the priorities for the development of transportation. The populations which take the most risks and which are the least careful (particularly in relation to speeds) wish to see fewer constraints and less interference.

There is also a logical connection between the perceived causes of accidents and stated opinions and behaviours. Populations, which are opposed to speed or drink-driving regulations, consider that accidents are due more to technical causes than to drink driving or driving too fast.

4.9 Conclusions

• As whenever we explore a set of responses related to attitudes and behaviour towards the main road safety measures, a marked contrast is apparent between those individuals who are opposed to regulations and those who systematically obey them. This dimension collects and cleaves mostly responses towards speed and alcohol areas.

• As was the case with SARTRE 1 a second dimension consisting of approval/lack of interest in technology (mainly in relation to motor vehicles) is apparent. This second dimension collects and cleaves mostly responses towards belt area.
• With respect to these dimensions, we can observe a similarity between attitudes towards speed and drink-diving regulations. Opinions and practices as regards seat belts are independent of the above attitudes. In other terms a driver who is in favour of seat belts can equally well be in favour of or opposed to the two other measures, whereas it is very rare for a driver who is in favour of speed limits to be against the limit for alcohol when driving.

• Roughly seven tendencies can be identified among drivers: drinking and driving; excess speeding and risk-taking; opposition to seat belts and not having them fitted; compliance with the rules of caution; compliance with speed limits; abstinence; and approval of seat belts.

• Those drivers who are opposed to speed limits and restrictions on drinking and driving are usually young employed unmarried males living in urban areas. This group also contains more senior executives and manual workers.

• Those drivers who are in favour of speed limits and restrictions on drinking and driving are more often elderly married or widowed females without an occupation who live in rural areas. There are more housewives or retired persons in this group.

• High mileage goes with risk-taking and less acceptance of seat belts. Low mileage goes with compliance with the rules of safety.

• Drivers in all countries are very much in favour of seat belts and wearing them. Drivers are the least in favour in Italy, Greece, Hungary, Slovakia, the Czech Republic, and slightly more in favour than this in Spain, Poland and Belgium.

• Reactions to speed and drink-driving regulations are more mixed. Drivers in Ireland, Hungary and Poland are the most in favour and drivers in Switzerland and Portugal are the most opposed to them.

• Important regional disparities within countries are apparent:
  • As regards seat belt wearing in Switzerland, the Czech Republic, Sweden and Belgium.
  • As regards speed and drink-driving regulations in Poland, Portugal, Finland and Austria.
  • In connection with all issues in Italy, Greece, Germany and France.
Annex

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SOCIAL ATTITUDES TO ROAD TRAFFIC RISK
Phase 2

Questionnaire SARTRE 2

International reference version in English

After pilot tests in CZ, NL, UK

- face to face interview at home
- drivers having full car driving licence
- and driven a car in the last 12 months
- representative sample: size $\geq 1000$ drivers

8/10/96 version

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Filters:
— Firstly, do you have a (full) car driving licence or permit? Yes (continue) No (= Thank you)
— Have you driven a car in the last 12 months? Yes (continue) No (= Thank you)

Questionnaire:

Country: __ __ Number: __ __ __ __
Language of this questionnaire: __ __
Region: __ __ (strate: see list in Annex B Local codes)
Size of town: (justify on right, about) __ __ __ __ __ _0 0 inhabitants (strate: <2,000, 2,000 to <100,000, >=100,000 inh)
Sex
Male...................1 Female.................2
Age last birthday? (ASK and WRITE IN) __ __ years (if quota take: <25, 25 - 39, 40 - 54, 55 and over)
Occupation?
self employed Farmer, fisherman.................................01
Professional lawyer, accountant, etc...........................02
Business-owner of shops, craftsman, proprietor.............03
employed Manual worker..........................................04
White collar, office worker.......................................05
Middle management, trainee.....................................06
Executive, top management, director.........................07
not employed Retired................................................08
Housewife, not otherwise employed............................09
Student, military service.......................................10
Unemployed.......................................................11

In total about how many kilometres (miles) have you driven in the last 12 months? __ __ __ __ 0 0 kilometres (or miles) [MUST ANSWER]

I “In the following interview, after a general question, all other questions relate to you as a car driver”

Q1. How concerned are you about each of the following issues?

<table>
<thead>
<tr>
<th>Issue</th>
<th>Very</th>
<th>Fairly</th>
<th>Not much</th>
<th>Not at all</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- Rate of crime</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b- Pollution</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c- Road accidents</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d- Standard of health care</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>e- Traffic congestion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>f- Unemployment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Q2. Would you be in favour of, or against, the Government devoting more effort to the following road safety measures?

<table>
<thead>
<tr>
<th>Measure</th>
<th>Strongly in favour</th>
<th>Neither in favour or against</th>
<th>Against</th>
<th>Strongly against</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- Improving driver training</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b- Have more enforcement of traffic laws</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

104
Annex

105

- Have more road safety publicity campaigns
- Test the road worthiness of more vehicles
- Improve the standards of roads

Q3. Do you agree or disagree with the following statements?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree or disagree</th>
<th>Strongly disagree</th>
<th>[DK]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- Penalties for driving offences should be much more severe</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b- People should be allowed to decide for themselves how much they can drink and drive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c- Car manufacturers should not be allowed to stress the speed of cars in their advertisement</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d- Better public transport is needed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Q4. How often do you think each of the following factors are the cause of road accidents?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
<th>Always</th>
<th>[DK]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- Driving when tired</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>b- Drinking and driving</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>c- Following too closely to vehicle in front</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>d- Driving too fast</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>e- Taking medicines and driving</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>f- Taking drugs and driving</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>g- Poorly maintained roads</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>h- Traffic congestion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>i- Bad weather conditions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>j- Poor brakes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>k- Bald tyres</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>l- Faulty lights</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>m- Defective steering</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Q5. When planning for the future, how much consideration do you think the Government should give to the following?

<table>
<thead>
<tr>
<th>Category</th>
<th>Very</th>
<th>Fairly</th>
<th>Not much</th>
<th>Not at all</th>
<th>[DK]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- pedestrians</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b- cyclists</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c- motorcyclists</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d- cars</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>e- lorries</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>f- public transport</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Q6. In general how safe do you think the following ways of travel are?

<table>
<thead>
<tr>
<th>Mode of Travel</th>
<th>Very</th>
<th>Fairly</th>
<th>Not much</th>
<th>Not at all</th>
<th>[DK]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- walking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b- riding a bike</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c- riding a motorcycle</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d- driving a car</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>e- driving a lorry</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>f- travelling on public transport</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
II “Now some questions about yours and other drivers behaviour”
(SHOW CARD 8)

Q7. Compared to other drivers, do you think your driving is...?
(dangerous) much more a bit more about the same a bit less a lot less [DK]
1 2 3 4 5 6

(SHOW CARD 4)

Q8. How often do you think other drivers break speed limits?

Never Rarely Sometimes Often Very often Always [DK]
1 2 3 4 5 6 7

(SHOW CARD 9)

Q9. Compared with other drivers, do you generally drive...? (...than average speed)
much faster a little faster about average a little slower much slower [DK]
1 2 3 4 5 6

(SHOW CARD 4)

Q10. In general, how often do you drive faster than the speed limit on the following types of road?

a- Motorways……………………………………1 2 3 4 5 6 7
b- Main roads between towns…………………..1 2 3 4 5 6 7
c- Country roads…………………………….1 2 3 4 5 6 7
d- Built-up residential areas………………….1 2 3 4 5 6 7

(SHOW CARD 5)

Q11. Compared to the present limits, what do you think the speed limit should be...?

lower same higher no limit [DK]

a- …in built-up residential areas………………1 2 3 4 5
b- …on main roads between towns…………..1 2 3 4 5

c- …on motorways…………………………1 2 3 4 5

(SHOW CARD 4)

Q12. On a typical journey, how likely is it that you will be checked for speed?

Never Rarely Sometimes Often Very often Always [DK]
1 2 3 4 5 6 7

Q13. In the last three years, have you been fined, or punished in any other way, for breaking the speed limit?
No…………………………………………..1
Yes, Only fined…………………………..2
Yes, Fined and/or other penalty……………..3
[DK]………………………………………….4

(SHOW CARD 4)

Q14. How often do you...?

a- …follow the vehicle in front too closely
b- …give way to a pedestrian at pedestrian crossings
c- …drive through a traffic light that is on amber
d- …overtake when you think you can just make it
e- …signal other drivers to warn them of a police speed trap ahead

Never Rarely Sometimes Often Very often [DK]
1 2 3 4 5 6 7

Q15. Does the car that you drive most often have seat belts fitted?

only in the front……….1
both front and rear………2
no……………………….3 __ SKIP TO Q17

(SHOW CARD 4)
Q16. When driving this car in the following situation, how often do you wear the seat belt in making a journey...?

<table>
<thead>
<tr>
<th>Situation</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very</th>
<th>Always</th>
<th>[DK]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- … in town.........................</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>b- …on main road between towns........</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>c- …on motorway......................</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

(QSHOW CARD 1)

Q17. I’ll read some statements to you concerning seat belts. Please tell me in each case how much you agree.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Very</th>
<th>Fairly</th>
<th>Not much</th>
<th>Not at all</th>
<th>[DK]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- If you drive carefully seat belts aren't really necessary</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b- In most accidents seat belts reduce the risk of serious injury for drivers and passengers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c- When I'm not wearing my belt I feel less comfortable; as though something was missing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d- There is a risk of being trapped by the belt in case of emergency</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Q18. In the last 3 years, have you been fined, or punished in any other way, for not wearing your seat belt?

No……………………………………………………………1

Yes, Only fined……………………………………...2

Yes, Fined and/or other penalty………...3

[DK]……………………………………………………………4

III “Now some questions concerning drinking and driving.”

(SHOW CARD 10)

Q19. In general how many days per week do you drink alcoholic beverages?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Most</th>
<th>5 to 6</th>
<th>3 to 4</th>
<th>1 or 2</th>
<th>&lt;1</th>
<th>Never</th>
<th>[DK]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Q20. In general, when you are drinking, how much alcohol do you typically drink…?

(WRITE IN……..)

Interviewer convert in units (see SHOW CARD 6): ___ ___ Units of alcohol

(SHOW CARD 10)

Q21. How many days per week do you drive after drinking even a small amount of alcohol?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Most</th>
<th>5 to 6</th>
<th>3 to 4</th>
<th>1 or 2</th>
<th>&lt;1</th>
<th>Never</th>
<th>[DK]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Q22. Over the last week, how many days did you drive, when you may have been over the legal limit for drinking and driving?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Most</th>
<th>5 to 6</th>
<th>3 to 4</th>
<th>1 or 2</th>
<th>&lt;1</th>
<th>Never</th>
<th>[DK]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
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Q23. In general, when you are drinking and driving afterwards, what is the maximum quantity of alcohol that you drink…? (WRITE IN……………………………………...)

Interviewer convert in units (see SHOW CARD 6) ___ ___ Units of alcohol

(SHOW CARD 13)

Q24. People have different opinions about what the legal limit should be. Which of the following statements best matches your opinion. Do you think that drivers should be allowed to drink …?

…no alcohol at all…………………………………………………….1

…less alcohol than at present………………………………………2

…as much alcohol as at present…………………………………3

…more alcohol than at present…………………………………4
as much as they want ................................................................. 5

Q25. In the last three years, have you been fined, or punished in any other way, for drink-driving?
No ................................................................. 1
Yes, Only fined ........................................... 2
Yes, Fined and/or other penalty ...................... 3

SHOW CARD 4

Q26. On a typical journey, how likely is it that you will be checked for alcohol?

IV "In the next part, you are asked questions on a variety of subjects."

SHOW CARD 1

Q27. There is a possibility of having similar laws and regulations applied to driving throughout Europe. In order to achieve this ‘harmonisation’ would you be in favour the introduction of the following measures throughout European countries?

Q28. How much do you agree to the following statements?

SHOW CARD 1

Q29. In general how dangerous do you think each of the following activities are?

SHOW CARD 1

Q30. In order to reduce air pollution, how much would you accept the following propositions:

Q31. Would you find it useful for you to have a device on your car like

a- a guidance system to find the way to destination............................... 1 2 3 4 5
b- a device to assist you not to exceed the legal speed limit...................1 2 3 4 5
c- a distance control system to maintain a safe distance automatically.................................................1 2 3 4 5
d- an alcohol-meter to check if you are over the legal limit.................1 2 3 4 5
e- a mobile telephone................................................................1 2 3 4 5

(SHOW CARD 11)
Q32. About how many people do you think were killed in road accidents in your country last year?
(replace N by ‘95 national value)
4 x N
2 x N
1.5 x N
1 x N
0.5 x N
0.25 x N
[DK]
1 2 3 4 5

(SHOW CARD 12)
Q33. What is the legal level of blood alcohol over which it is not allowed to drive?
(gramme/liter, use national unit)
0.0
0.2
0.3
0.5
0.7
0.8
1.0
[DK]
1 2 3 4 5

Q34. In your opinion, how much alcohol are we allowed to drink before driving and stay under the legal limit?
(WRITE IN:...........................................................................) Interviewer convert in units (see SHOW CARD 6) __ __ Units of alcohol

VI “Finally can I ask you a few questions about yourself”
Q35. In the last 3 years, how many accidents have you been involved in, as the driver of a vehicle, in which someone, including yourself, was injured and received medical attention? __ __ accident(s)
Q36. In the last 3 years, how many damage only accidents have you been involved in, as the driver of a vehicle? __ __ accident(s)

Q37. Which of the following applies best to you at the moment?
...Single.........................................1
...Living as married..........................2
...Married........................................3
...Separated or Divorced.....................4
...Widowed......................................5

Q38. Do you live:
...in couple....................................1
...with your parents.........................2
...alone..........................................3
...other case....................................4

Q39. How many persons live with you, including adults and children but not including you? __ __ persons

Q40. Do you have any children in the following age ranges, living at home at present?
(A= min age for driving car) Yes No
a- Aged before primary school.................................1 2
b- Aged of primary school........................................1 2
c- Aged after primary school and under A.....................1 2
d- Aged of car driving (A and over).............................1 2

Q41. What level of education did you achieve?
Primary school.........................................................1
Secondary school.................................................2
Further education..................................................3
None.........................................................................4

Q42. How old were you when you stopped your full-time education? (98 IF NOT FINISHED) __ __ years

Q43. How would you describe the area in which you live?
Rural/village.........................................................1
Small town............................................................2
Suburban/city outskirts.........................3
Urban/city/large town............................4
[DK]..................................................5

Q44. What applies most to you?
I drive for my profession.......................1
I need to drive during my work...................2
I drive to and from work..........................3
None of these.........................................4

Q45. About the car you usually drive, is it...?
... a car with engine size of less than 1,000 cc............1
... a car with engine size from 1,000 to 1,299 cc...........2
... a car with engine size from 1,300 to 1,999 cc...........3
... a car with engine size of 2,000 cc or more............4
... a car [but really don’t know engine size]............5

Q46. Identification of the vehicle...............................................__ __ __

Q47. About this car, do you consider yourself as:
... the main driver................................................1
... an occasional (secondary) driver.......................2
... other case......................................................3
... [DK]...............................................................4

Q48. How many years car driving experience have you had? __ __ years, __ __ months
(under 5 years ask also for months)

Q49. Is the vehicle you normally drive owned by...?
... yourself................................................................1
... another member of your family............................2
... your employer/or employed by your employer............3
... a friend.........................................................4
... a hire or leasing company...............................5

Q50. Is the vehicle you normally drive insured for...?
... minimum amount legally required.........................1
... fully comprehensive........................................2
... not insured...............................................3
... [DK]..............................................................4

(SHOW CARD 7)

Q51. We would like to analyse the results of the survey according to the annual income level of family units.
Here is an income scale. Would you give me the number of the category in which your household fall. The wages, allowances, and all types of income from persons who are living at your home should be included.

1 2 3 4 5 6 7 8 [9 DK]

******************************************************

Mandatory, anonymous!

Interview
Number: __ __ __,
Sex : Male..........1 Female...........2
Age : under 25..........1
25 - 39.............2
40 - 54.............3
55 and over...........4

Interview
Begin: morning (<12AM)............1
afternoon (12AM-6PM)........2
evening (>6PM).............3

Duration : __ __ __ minutes
Date : __ __ (month); __ __ (day)

******************************************************

Annexe of Questionnaire
### A- SHOW CARDS

**SHOW CARD 1**

- Very
- Fairly
- Not much
- Not at all

**SHOW CARD 2**

- Strongly in favour
- In favour
- Neither in favour or against
- Against
- Strongly against

**SHOW CARD 3**

- Strongly agree
- Agree
- Neither agree or disagree
- Disagree
- Strongly disagree

**SHOW CARD 4**

- Never
- Rarely
- Sometimes
- Often
- Very often
- Always

**SHOW CARD 5**

- lower
- same
- higher
- no limit

**SHOW CARD 6 (adapt if needed)**

- One unit of alcohol: 1/2 pint beer = 1 demi de bière
- = 1 glass wine = 1 verre de vin
- = 1 single spirit = 1 verre d'apéritif ou digestif

i.e. 1 PINT BEER or DOUBLE SPIRIT = 2 UNITS

**SHOW CARD 7**

ANNUAL FAMILY INCOME CLASSIFICATION

(in each country take min. and max. income level, then divide in 8 equal range classes; if more convenient ask monthly income)

**SHOW CARD 8**

- much more dangerous
- a bit more dangerous
- about the same
- a bit less dangerous
- a lot less dangerous

**SHOW CARD 9**

- much faster than average
- a little faster than average
- about average speed
- a little slower than average
- much slower than average

**SHOW CARD 10**

- Most days
- 5 to 6 days a week
- 3 to 4 days a week
- 1 or 2 days a week
- Less than 1 day a week
- Never

**SHOW CARD 11 (replace N by national value)**

- about 4 x N, about 2 x N, about 1.5 x N
- about 1 x N, about 0.5 x N, about 0.25 x N

**SHOW CARD 12 (adapt unit)**

- 0.0  0.2  0.3  0.5  0.7  0.8  1.0 grammes per liter

**SHOW CARD 13**

- drivers should be allowed to drink:
  - …no alcohol at all
  - …less alcohol than at present
  - …as much alcohol as at present
  - …more alcohol than at present
  - …as much alcohol as they want

### B- LOCAL CODES

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