

PSYCHOLOGICAL, SOCIAL AND SITUATIONAL FACTORS INFLUENCING THE SPEED CHOICE AND SEAT BELT USAGE OF DRIVERS

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The project is commissioned by AKMI (Technical and Information Services on National Roads) and supervised by Peter Vasi, Budapest 1999.

THE AIM OF THE PROJECT

- to identify the most frequent habits of speed selection and of the main motives of not using seat belts
- to investigate the interrelationship between seat belt usage and the speed choice of drivers
- to propose a strategy to increase seat belt usage rate, to decrease speeding and to increase safety awareness of the driving population.

PARTS OF THE INVESTIGATION:

1. Questionary

1.1. *with questions about*

- subject (sex, age, km of driving, accidents, car type and size used, seat-belt and air-bag in the car, etc.)
- general speed selection on different road types and in different circumstances, and also estimation of the speed of other car drivers
- general own seat-belt usage on different road types and in different circumstances, and also estimation for other car drivers
- the reasons for keeping or not keeping the speed-limits
- the reasons for using or not using the seat-belts
- suggestions for preventing speed-limit violations
- suggestions on decreasing or increasing the speed-limits, applying stricter enforcement against violating drivers, etc.

1.2 *with inviting respondents to add their opinion freely about the subject*

2. Field Measurements

2.1 *recording the seat-belt usage*

- of the driver, the front-seat passenger and the back-seat passengers
- together with the sex and approximate age of the persons

2.2 *measuring the average speed of the observed car near the observation site*

AD 1. QUESTIONARY

The questionnaire is similar to the normal, world-wide used questionnaire, some question with a choice of yes-no, but in the most case with a possibility of selecting from a five scale series.

That is five page long, needing about 20-30 minutes to fill out – it was necessary because of the combined topic (speed and seat-belt).

The method for spreading the questionnaires was planned in three different way:

- direct making fill out at the FORMULA-1 racing (some student undertake the task to ask the observers to fill out the questionnaires);
- spreading the questionnaire at some bigger super-market for the buyers;
- sending out to about 3000 reader of a transport association letter;
- taking to the web, and asking some mailing-list members to fill out the questionnaire.

At the FORMULA-1 racing we have not too much success, because there was too much foreigner (Finnish people coming to see Häkkinen), and the other Hungarian observers find to be too long the questionnaire to deal with it at the spot.

The super-market-buyers were not too eager to send back the matter, in spite of the promise they made sometimes to do it.

A huge number (about 20% -> cc. 500 pieces) of filled-out questionnaire were received from the member of the transport association, by a lot of remarks, suggestions. So it was a good idea to spread to them the questionnaire.

We have also good success by the internet. We have received near 200 questionnaires from the member of different mailing lists. Sometimes they also comment it too.

A very valuable part of our questionnaire-type investigation is the free-answers. We have a huge number of suggestions/remarks/comments, which are really worth to analyse. So we can recommend for everybody, who are dealing with this type of investigations, to allow the people to speak freely about his/her opinions.

The data recording in PC are going on, the analysing has to be finished in some weeks.

AD 2. FIELD-MEASUREMENTS

The aim of these measurements was to collect data about the real usage of seat-belts, together with some additional information (sex, age, speed, etc.), in order to compare and complete the data received by the questionnaires.

The sites of measurements were selected as follows: a minor rural road, a main rural road, a motorway and three major intersections in the city of Budapest.

The seat-belt usage was observed by students on the spots, where the cars stopped at red-lights, at intersections, or at toll gates (on the motorway). They recorded the data on pre-printed sheets, without asking or disturbing the drivers or passengers.

Additional speed-measurements were made on non-urban roads (not in Budapest). At the beginning the use of video-cameras was planned, located at two spots with some distance (about 10 km) from each other, recording the exact times and number-plates, and calculating the speed from the date of distance/time for each car separately. Unfortunately, at the first trial we had problems with the camera usage: at a higher car-speed (above 150 km/h on the motorway) it was impossible to read the number-plates because of the poor resolution.

So we decided to work with students instead of cameras; they recorded the identification-number of the cars, and the exact time of passing the spots. The accuracy of time-recording was about 5-10 seconds both at the starting and arriving points, so the speed was not exactly measured, but rather estimated only – but it was enough for our momentary purposes.

In the future – if there will be interest to continue this type of investigations – we plan to use palm-top computers with a simple software recording automatically the exact time of recording the car identification number manually by students. (In the present project we hadn't enough budget to manage the measurements this way).

Some preliminary results

At this moment the project is still going on, so we have finished the collection of data, and the analysis has just begun. In spite of this, we have some results worth to mention.

Table 1
Seat belt usage on a minor rural road with different conditions

	M E N				W O M E N			
	number of subjects			%	number of subjects			%
	seat-belt use		SUM		seat-belt use		SUM	
yes	no			yes	no			
AS DRIVERS								
without condition	148	268	416	36	27	53	80	34
without passenger	74	154	228	32	13	34	47	28
with passenger	74	114	188	39	14	19	33	42
with children	5	7	12	42	2	7	9	22
front seat pass.: man	16	66	82	20	9	2	11	82
- " - : woman	47	41	88	53	5	8	13	38
AS PASSENGERS								
without condition	29	64	93	31	55	46	101	54
if driver is a man	21	60	81	26	47	41	88	53
- " - : woman	8	3	11	73	8	5	13	62

In Table 1 you may see the rate of seat-belt usage on a minor rural road without and with some different conditions. We can detect that the general seat-belt usage is rather low, at about one third. Interestingly, if there is a front seat passenger in the car, the driver's seat belt usage depends very much on the sex of the passenger: if the driver is a man, and there is a women passenger on the front seat, he tends to use the seat belt more often than with a male passenger. At the same time the women as drivers use their belts more frequently beside a male than beside a female passenger.

For the passengers the driver's sex is important in the rate of seat-belt usage, but in their case the usage rate is higher, if the driver is a woman.

Unfortunately, the number of persons observed is rather small in every case (especially for the women), so these data cannot be considered to be significant.

Table 2
Seat belt usage on a main road with different conditions

	M E N				W O M E N			
	number of subjects			%	number of subjects			%
	seat-belt use		SUM		seat-belt use		SUM	
yes	no			yes	no			
AS DRIVERS								
without condition	570	498	1068	53	97	79	176	55
without passenger	347	319	666	52	61	53	114	54
with passenger	223	179	402	55	36	27	63	57
with children	17	12	29	59	8	6	14	57
front seat pass.: man	68	95	163	42	11	12	23	48
- " - : woman	139	75	214	65	13	10	23	57
AS PASSENGERS								
without condition	70	116	186	38	149	88	237	63
if driver is a man	57	106	163	35	140	74	214	65
- " - : woman	13	10	23	57	9	14	23	39

We may notice, that on a main rural road the general rate of seat-belt usage of the drivers is higher than on the minor rural road observed: it is slightly above 50%.

In this case a woman as a front seat passenger seems to positively influence the driver to use the seat-belt, independently of driver's sex.

On the other hand, the driver's sex seems to influence the rate of seat-belt usage of the front seat passenger inversely: higher the rate, if the passenger is of the opposite sex.

Table 3
Seat belt usage on a highway with different conditions

	M E N				W O M E N			
	number of subjects			%	number of subjects			%
	seat-belt use		SUM		seat-belt use		SUM	
yes	no			yes	no			
AS DRIVERS								
without condition	753	774	1527	49	113	109	222	51
without passenger	379	408	786	48	67	59	126	53
with passenger	366	375	741	49	46	53	99	46
with children	20	21	41	49	1	3	4	25
front seat pass.: man	157	165	322	49	18	16	34	53
- " - : woman	197	194	391	50	26	34	60	43
AS PASSENGERS								
without condition	188	168	356	53	239	212	451	53
if driver is a man	164	158	322	51	209	182	391	53
- " - : woman	24	10	34	71	30	30	60	50

In this Table we can see that the rate of seat belt use on the selected motorway is also about 50%, and the driver and front seat passenger seem to positively influence each other if their sex is different.

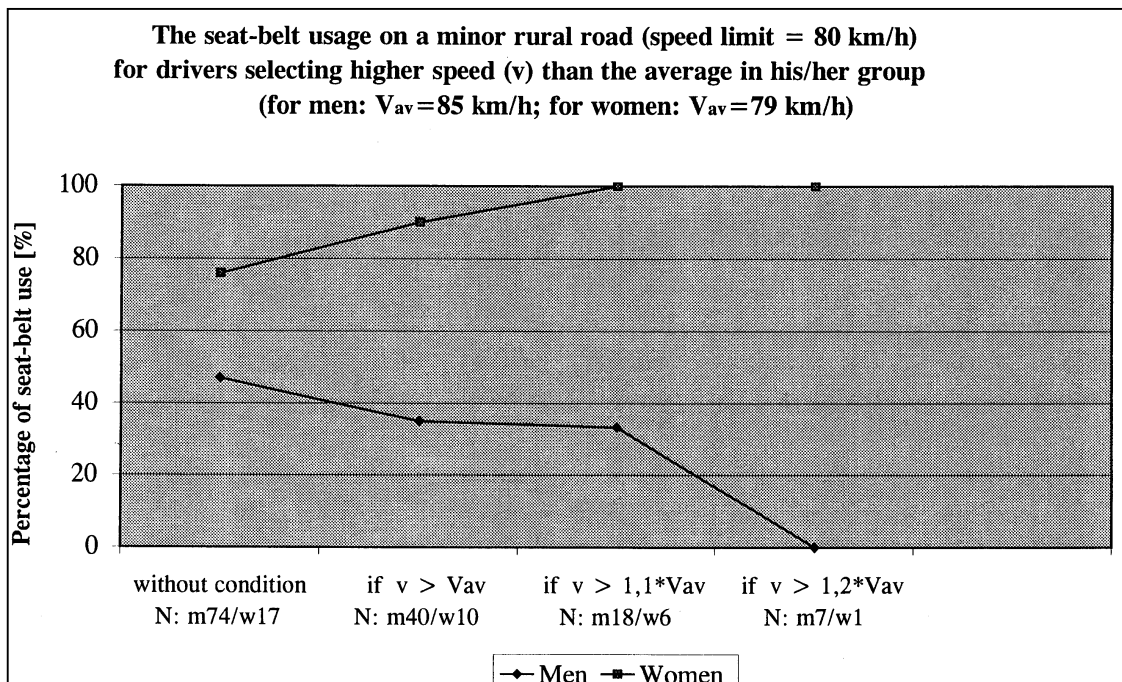
The rate of seat-belt usage is higher (more or less) on every road type in the case of men-drivers, if the front-seat passenger is a woman, and significantly higher for a male front-seat passenger with a female driver.

Men are also positively influencing women in using the seat-belt, but – because of the low number of subjects – this relation seems not to be so consequent.

The next series of figures are dealing with the connection between the seat-belt usage and speed-choice of drivers.

In Figure 1 you may see that on a minor rural road the higher the speed, the higher the rate of seat-belt usage of women. However, it is the opposite case for men: the higher the speed, the lower the rate of seat-belt usage.

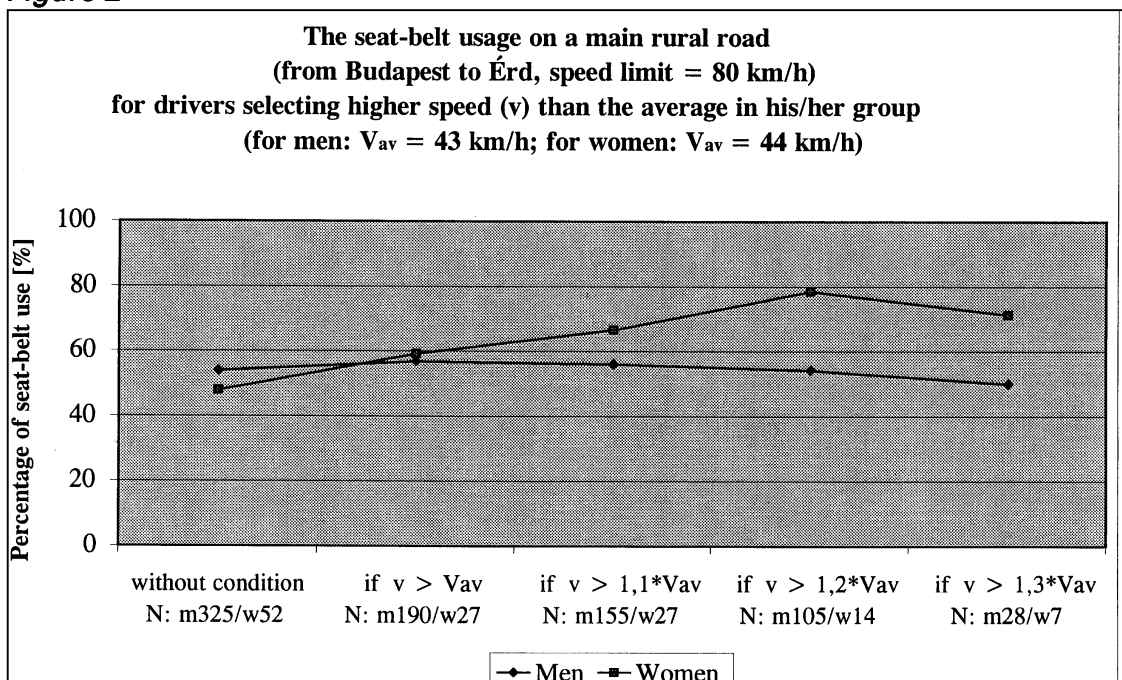
Figure 1



The difference between the rate of seat-belt usage for men and women seems to be significant, but we have to note, that the number of subjects is rather low, especially for the recorded women-drivers.

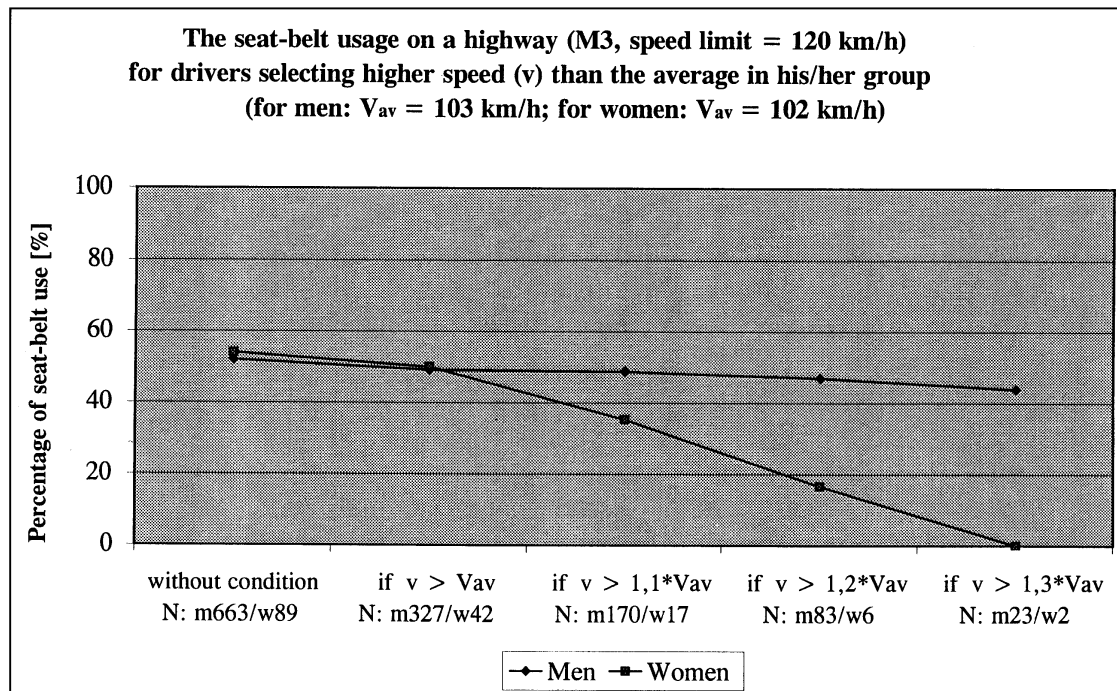
In the Figure 2 the difference between the genders and the tendency seem to be similar on our selected main rural road as well: the higher the speed, the higher the rate of seat-belt usage for women, and the opposite for men. There are not such big differences between men and women in the rate, as were in the case of the minor rural road.

Figure 2



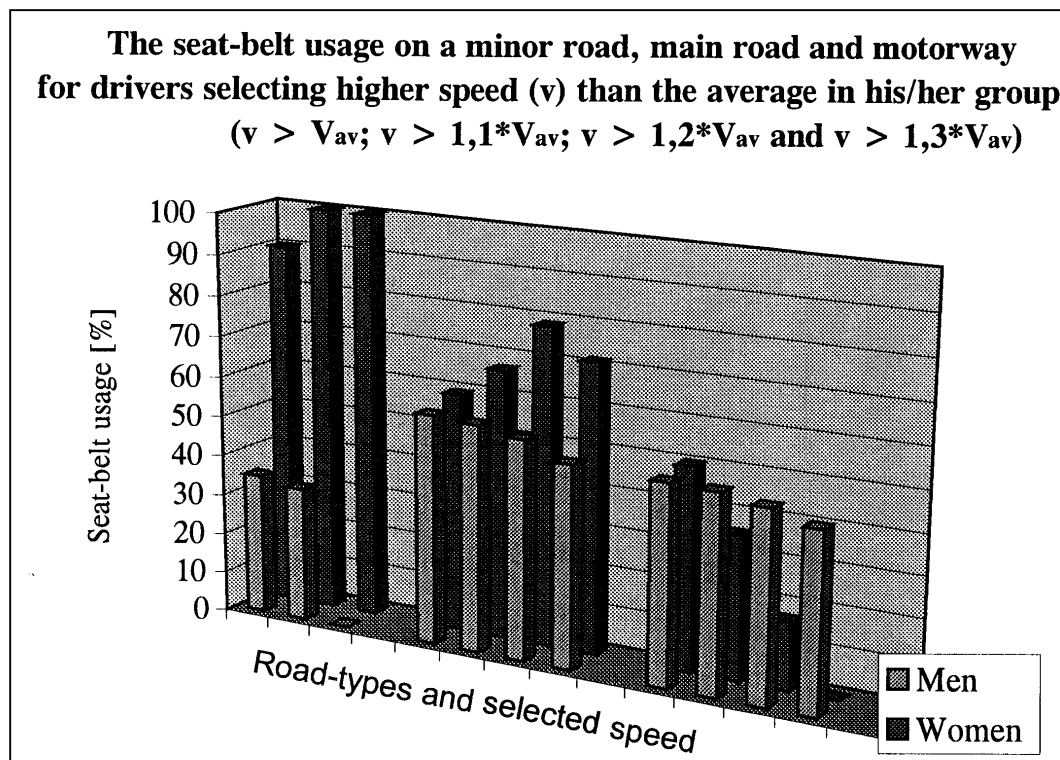
We can explain these data of course, but after this, we may be surprised seeing the Figure 3: the higher the speed, the lower the rate of seat-belt usage both for men and women.

Figure 3



In Figure 4 the last three figures are combined:

Figure 4



We may detect, that there is a significant dependence of the seat-belt usage on the speed choice for men: the higher the speed, the lower the rate of seat belt usage. The decrease is moderate, but for a higher number of objects.

For women, the results are more complex.

First we have to mention, that the rate of women-drivers in the sample is very low: 16%, 14% and 12% respectively for minor road, main road and motorway for all of the recorded cars, and 18%, 14% and 12% respectively for the cars involved in the speed measurements.

On the minor road the higher rate of seat-belt usage is valid only for the women drivers travelling between villages (involved in speed measurements). The data cannot be regarded to be significant, but the tendency is worth to remember.

The rate of seat-belt usage for women is rather high (75%) on the minor rural road, but it was low in the village: 34%; similarly to the men-drivers, see Table 1. It means that almost every woman uses the seat-belt on the minor rural road driving from one village to another, especially if she chooses a higher speed than the average.

On the main rural road, the female drivers used the seat-belts more frequently than the male drivers, and the rate increased with the increasing speed – but we also have to notice that the number of subjects was low.

The most surprising result of this field study has been that the women driving with higher speed on the motorway are neglecting to use their seat-belts (decreasing usage with increasing speed), in much higher rate, than the men.

We may find explanations.