

**I. Papp; M. Papp**  
**OCTAV**

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

commissioned by  
AKMI  
(Technical and Information Services on National Roads)

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 the safety awareness of the driving population.

## **PARTS OF THE INVESTIGATION:**

### **1. QUESTIONNAIRE**

- 1.1 with questions about
  - subject (sex, age, driving experience, accident record, car type and size, 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. QUESTIONNAIRE**

The questionnaire used in this survey is similar to the normal, worldwide used questionnaires, partly with yes-or-no questions, partly with the possibility of selecting the answer from a five scale series.

The questionnaire is five pages long, it takes about 20-30 minutes to fill it out – such length was necessary because of the combined topic (speed and seat belt).

Answers were collected in three different ways:

- direct fill out at the FORMULA-1 Grand Prix (students asked visitors to fill out the questionnaires);
- spreading the questionnaire at some bigger super-markets;
- sending them out to about 3000 subscribers of a transport sciences association newsletter;
- asking some mailing-list members on the web to fill out the questionnaire.

At the FORMULA-1 Grand Prix we had little success, because there were too many foreign visitors (mainly Finnish people coming to see Häkkinen), and the Hungarian visitors found the questionnaire too long to deal with on the spot.

The super-market-shoppers were also rather reluctant to send back the questionnaire.

A huge number (about 20% -> cc. 500 pieces) of filled-out questionnaires were received from the members of the transport sciences association, accompanied by valuable remarks and suggestions.

We have received about 200 questionnaires from the members of different Internet mailing lists. Many of them also added comments to the topic.

Voluntary comments have proven to be a very valuable part of our questionnaire survey. We have received a huge number of suggestions/remarks/comments, worth to analyse. The data recording is still going on, analyses will be finished soon.

## **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 at such places in traffic, where the cars were stopping at red lights, at intersections, or at tollgates (on the motorway). The data were recorded on pre-printed sheets, without asking or disturbing the drivers or passengers.

Additional speed-measurements were made on non-urban roads (outside 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 data 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 numberplates because of the poor resolution.

So we decided to work with students instead of cameras; they recorded the licence plate 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 estimated only rather than exactly measured, – but it suited our purposes.

In the future – if there will be interest in going on with this type of investigations – we plan to use palm-top computers with a simple software automatically recording the exact time of manually recording the licence plate number by the students. (In the present project we could not manage the measurements this way, because of budget constraints.)

## SOME PRELIMINARY RESULTS

Although the project is still going on (we have finished the collection of data), and the analysis has just begun, some results seem to be worth mentioning.

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			
<b>AS DRIVERS</b>								
without condition	148	268	416	<b>36</b>	27	53	80	<b>34</b>
without passenger	74	154	228	<b>32</b>	13	34	47	<b>28</b>
with passenger	74	114	188	<b>39</b>	14	19	33	<b>42</b>
with children	5	7	12	<b>42</b>	2	7	9	<b>22</b>
front seat pass.: man	16	66	82	<b>20</b>	9	2	11	<b>82</b>
- “ - : woman	47	41	88	<b>53</b>	5	8	13	<b>38</b>
<b>AS PASSENGERS</b>								
without condition	29	64	93	<b>31</b>	55	46	101	<b>54</b>
if driver is a man	21	60	81	<b>26</b>	47	41	88	<b>53</b>
- “ - : woman	8	3	11	<b>73</b>	8	5	13	<b>62</b>

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, somewhat above 30 %. Interestingly, if there is a front seat passenger in the car, the driver's seat belt usage seems to depend very much on the sex of the passenger: if the driver is a man, and there is a woman passenger on the front seat, he tends to use the seat belt more often than with a male passenger. At the same time women drivers use their belts more frequently beside a male than beside a female passenger.

The driver's sex seems to influence the passengers in their 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 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			
<b>AS DRIVERS</b>								
without condition	570	498	1068	<b>53</b>	97	79	176	<b>55</b>
without passenger	347	319	666	<b>52</b>	61	53	114	<b>54</b>
with passenger	223	179	402	<b>55</b>	36	27	63	<b>57</b>
with children	17	12	29	<b>59</b>	8	6	14	<b>57</b>
front seat pass.: man	68	95	163	<b>42</b>	11	12	23	<b>48</b>
- “ - : woman	139	75	214	<b>65</b>	13	10	23	<b>57</b>
<b>AS PASSENGERS</b>								
without condition	70	116	186	<b>38</b>	149	88	237	<b>63</b>
if driver is a man	57	106	163	<b>35</b>	140	74	214	<b>65</b>
- “ - : woman	13	10	23	<b>57</b>	9	14	23	<b>39</b>

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

In this case a woman as front seat passenger seems to positively influence the driver to use the seat belt, independently of the 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			
<b>AS DRIVERS</b>								
without condition	753	774	1527	<b>49</b>	113	109	222	<b>51</b>
without passenger	379	408	786	<b>48</b>	67	59	126	<b>53</b>
with passenger	366	375	741	<b>49</b>	46	53	99	<b>46</b>
with children	20	21	41	<b>49</b>	1	3	4	<b>25</b>
front seat pass.: man	157	165	322	<b>49</b>	18	16	34	<b>53</b>
- “ - : woman	197	194	391	<b>50</b>	26	34	60	<b>43</b>
<b>AS PASSENGERS</b>								
without condition	188	168	356	<b>53</b>	239	212	451	<b>53</b>
if driver is a man	164	158	322	<b>51</b>	209	182	391	<b>53</b>
- “ - : woman	24	10	34	<b>71</b>	30	30	60	<b>50</b>

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

The rate of seat-belt usage is (more or less) higher 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 seem also to positively influence women in using the seat belt, but – because of the low number of subjects – this needs further justification.

The next series of figures show the connection between seat-belt usage and the 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.

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 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 so big differences between men and women in the rate, as were in the case of the minor rural road.

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

In Figure 4 the last three Figures are combined:

We may detect, that there is a significant dependence of 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% for minor road, main road and motorway respectively 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 is 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, female drivers used the seat belts more frequently than male drivers, and the rate increased with increasing speed – but we also have to notice that the number of subjects here was low.

The most surprising preliminary result of this field study has been that women driving with higher speed on the motorway refuse using their seat belts (decreasing usage with increasing speed) in much higher rate than do male drivers.

Further analysis will follow.