15 Acceptability of speeds and speed limits to drivers and pedestrians

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ABSTRACT

Starting from the assumption that a definition of appropriate speeds cannot be given independently of what road users think and feel with respect to this question, 100 semi-standardized interviews with car drivers and 100 semi-standardized interviews mainly with pedestrians were made in 6 European countries (Austria, Germany, Hungary, Portugal, Spain and Sweden).

The results should provide a basis for an efficient communication with road users, when "selling[1]" measures for achieving appropriate speeds.

Both, car drivers and pedestrians were asked with respect to the following headings:

- *Assessment of speeds,* including assessment of speed limits and actual speeds on relevant road types
- *What criteria are used by the interviewees for assessing speed problems*
- *Contribution of one's own behaviour to the identified problems*
- *Explanations for one's own behaviour*
- *Supposed motives of the others*
- *Acceptance of the present situation*
- *Are measures to reduce speeds necessary?*
- *Acceptance of measures*

The results show that both groups (car drivers and pedestrians) find that actual speeds are too high, but as expected, pedestrians do more so.

The interviewed car drivers agree that they contribute to the problems with their own speed behaviour. However, they rationalise their own motives for problematic speed behaviour. To the other car drivers they attribute slightly more egoistic and irrational motives. Almost half of both groups think that speed reducing measures are necessary. However, pedestrians prefer efficient measures that have a direct impact on car drivers speed choice, while car drivers prefer measures that leave the decision to themselves.

The results are elaborated to provide recommendations, with the long term goal to change road users behaviour, and here especially car drivers behaviour, in a way that it is acceptable for all members of society.

[1] An OECD study (1993) has recommended the greater use of marketing and social marketing for traffic safety

Introduction

The goals of this workpackage of the MASTER project dealing with "the acceptability of speeds and speed limits to drivers and pedestrians" were

- to find ways how to establish what speeds are appropriate in different situations
- to find out what road users themselves think and feel with respect to the concept of „appropriate speed“
- what problems inappropriate speeds cause according to road users
- what measures road users accept in order to achieve changes in speeds

The results should provide a basis for an efficient communication[2] with the road users. In the frame of this communication the road users' behaviour should develop or change in such a way that traffic flows (more) according to the desired speed levels.

The results of the work should allow more thorough advice with respect to what speeds should be chosen in different situations, and help to achieve compliance with the advice given. They can be used for developing arguments that support measures for speed management, thereby making use of the addressed target groups' own points of view. These arguments should be given both together with certain technical or legal measures, and as a central ingredient of publicity and education measures.

15.1 Methods and data

To get an idea of what people themselves think about certain speed behaviour, how they interpret the social view of these types of behaviour, and how strong their own motivation is to behave according to these beliefs, 100 attitude surveys in six European countries - Austria, Germany, Hungary, Portugal, Spain, Sweden - were carried out with car drivers and 100 with pedestrians/cyclists. Both target groups had to answer questions in their role as residents, in terms of a safe access in a good environment.

A model underlying the interviews with the target groups was developed. It consists of a sequence of aspects interconnected in a way that seemed logical to us. Each of the aspects was covered with a set of questions.

In the following the model underlying the interviews with the target groups is presented:

[2] The basic concept is that everything that is done by official institutions or by those who represent them in public, or in the public space, in order to improve traffic safety is in principle a communication process. Narrowing roads in the hope to reduce car speeds is as much an action addressed to the road users, to which they hopefully react in a wished-for way, as is the information in the media about a new law on, e.g., the future fines for exceeding speed limits.

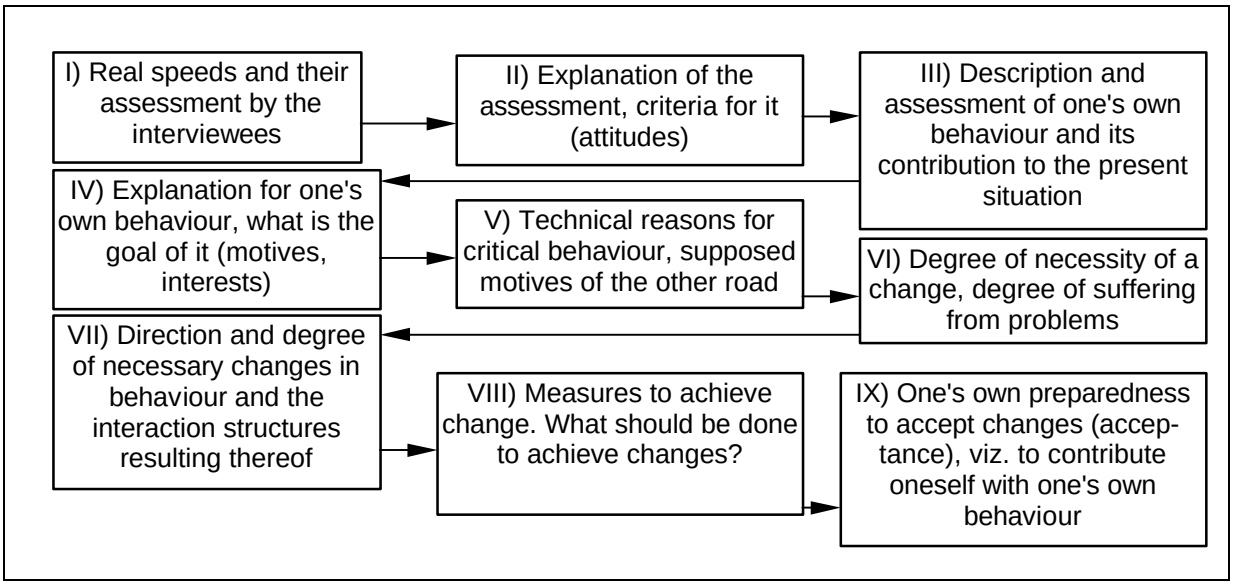


Figure 1: Network of topics

The model above follows those aspects that we considered relevant for the interviews, step by step, from the problems connected to (inappropriate) vehicle speeds to the measures to solve these problems.

The interviews also included questions referring to defined sites in the road network with respect to the question what the interviewee considered as appropriate speed there. We assumed it would be easier for both of the interview groups to give sufficiently comments on what "desired or appropriate speeds" are, when talking about a concrete situation.

The following types of sites were chosen for analysing speed problems:

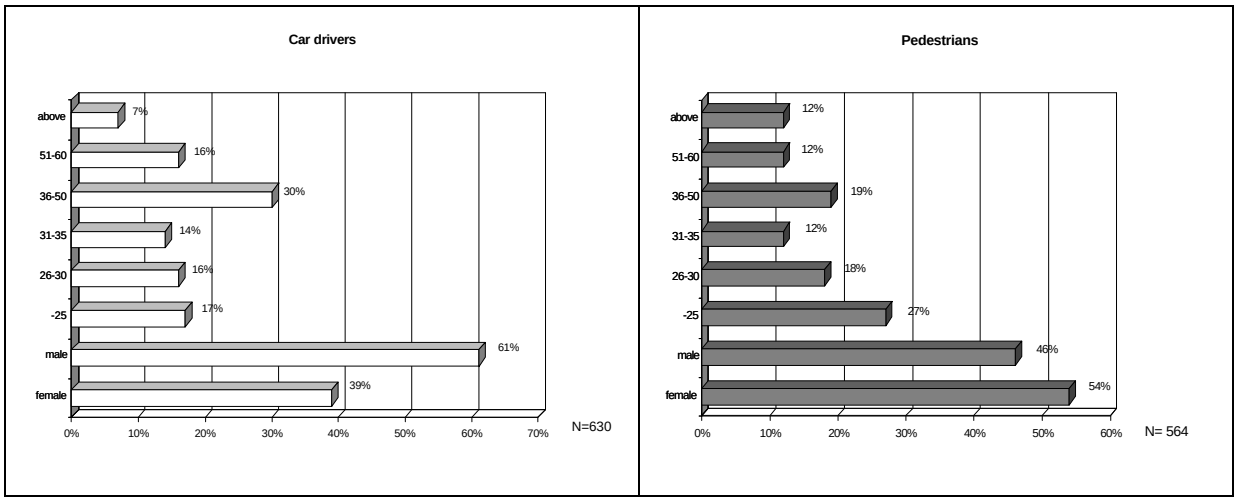
1. a 2 - 3 lane road between intersections in the city
2. a narrow one way lane within a built up area with parked cars
3. a non-regulated intersection with one lane or two lanes with the car driver interacting with pedestrians/cyclists while
   - turning left
   - turning right
   - driving straight ahead
4. village entrances

15.1.1 The samples

The interviewers were requested to recruit 25 car drivers and 25 pedestrians at each of the above mentioned sites.

In the following graphs the samples of car drivers and pedestrians separated by gender and age according to their mode choice are presented:

Graph 3-4: Samples of car drivers and pedestrians



15.2 Results

In the following the main results of the interviews will be presented.

15.2.1 Assessment of speed limits and actual speeds by the interviewees

According to the literature, people tend to complain about inappropriate (mostly in the sense of too high) speeds more in their role as unprotected road users and as residents. In their role as car drivers, road users do not complain that much.

Our results showed that more than half of the respondents answered that the speed limits are appropriate for them, while more than half of them think that the actual speeds are too high (see also SARTRE 1994). The pedestrians predominate significantly in assessing the speed limits and the actual speeds as too high, but still approximately 50% of the car drivers consider speeds as being too high.

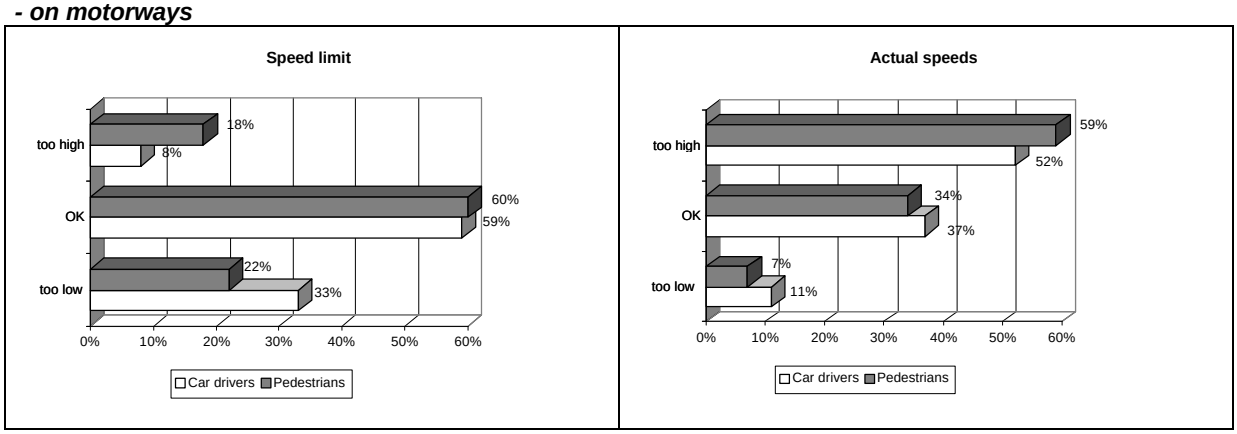
This means that both groups of road users are aware of the problem of too high speed. But especially in those cases where pedestrians due to their own mobility are confronted directly with inappropriate vehicle speeds, they mention too high speed clearly more often than car drivers.

It can be also derived from the answers that car drivers are aware of the problem in their role as residents according to their assessment with respect to high speeds.

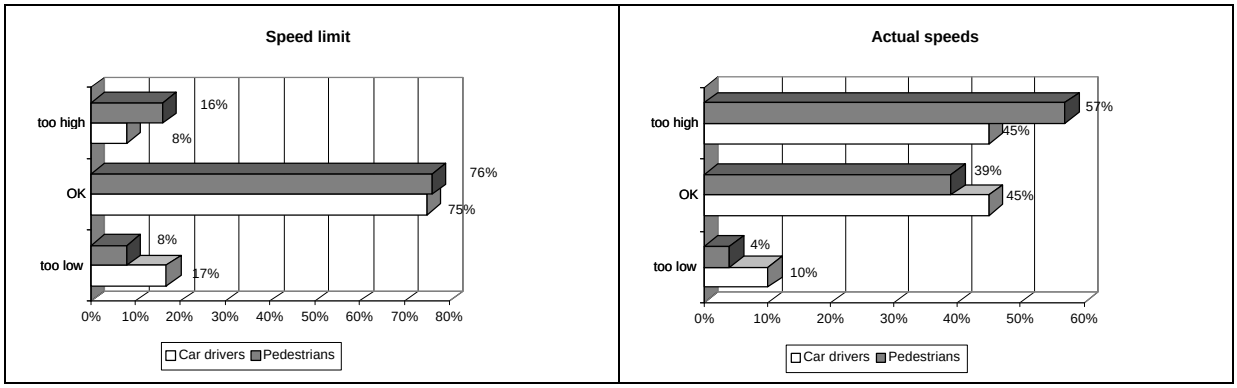
In the following graphs the results are presented according to different road types:

Graph 3-8: Car drivers (N=630) and pedestrians (N=564) attitudes towards speed limits and actual speeds

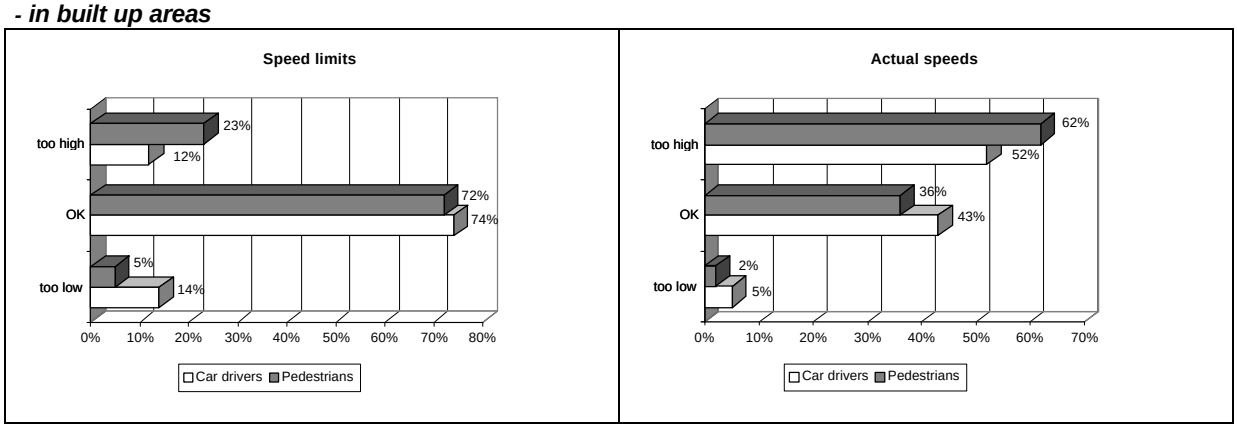
- on motorways



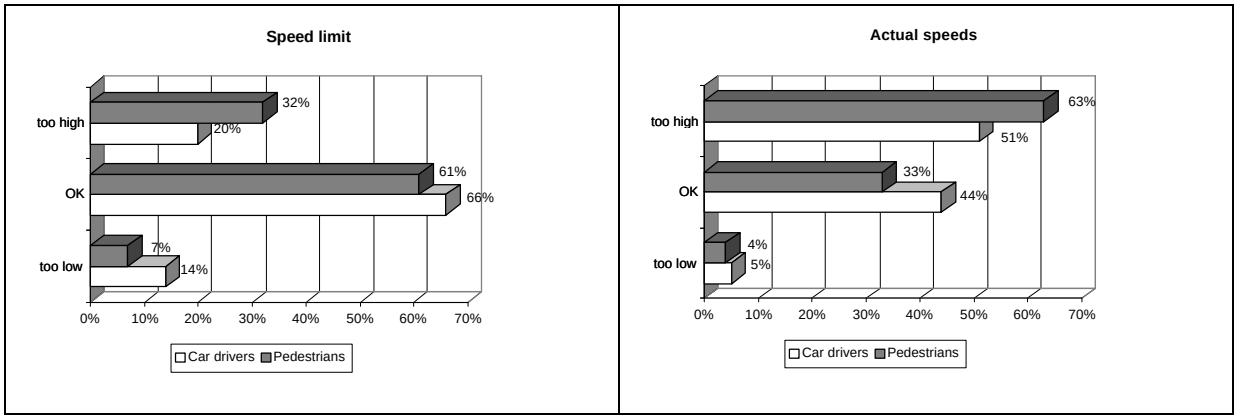
- on rural roads



- in built up areas



- in residential areas



15.2.2 Explanation of and criteria for assessment

To understand more clearly, where inappropriate speeds are considered most problematic, the interviewees were asked for situations they consider dangerous and in which situations car drivers should slow down.

15.2.2.1 Dangerous situations and situations where speeds should be reduced

Since the results reported in the following reflect answers to open questions, there are no data displayed in percentages, but it is only mentioned which answers were the most frequent ones.

For both groups **traffic-, road- and weather conditions, and the presence of children, older people or, more generally, pedestrians** are very important circumstances for reducing speed.

Beside these answers, car drivers also mention situations where they are confronted with the consequences of other car drivers' behaviour.

As expected, pedestrians mention more often than car drivers pedestrian crossings, badly arranged crossings and residential areas as those circumstances and sites where speeds should be lower than now.

The pedestrians' opinion concerning the situations in which a lower speed is preferred is also reflected in the assessment of dangerous situations: They refer to such dangerous situations in which they are confronted with a "**regardless behaviour of car drivers**". This is, e.g., especially relevant **when crossing a street with more than two lanes**, **at badly arranged crossings**, **at non regulated crossings** and **where vehicles are driving with too high speed**. Almost in all countries the category "**people who do not pay attention to others**" is mentioned.

In summary situations resulting from the interaction with car drivers are considered most often as dangerous by pedestrians. For drivers the dangerous situations result from bad weather-, traffic- and infrastructure conditions, and from the interaction with other car drivers.

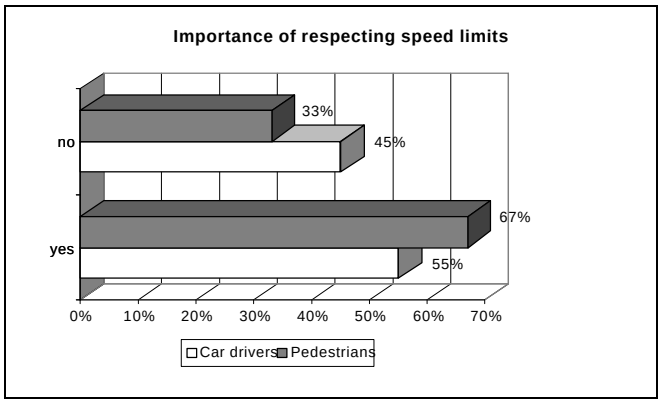
15.2.3 Contribution of one's own behaviour to the present situation

To understand the current situation with respect to speeds on European roads, it is also important to get a deeper insight into the road users' assessment of their own contribution to this situation, viz. to arising problems.

15.2.3.1 Should speed limits be respected under all circumstances?

In the following, results are presented that reflect the extent to which car drivers and pedestrians agree that speed limits should be respected under all circumstances.

Graph 9: Car drivers (N=630) and pedestrians (N=564) attitudes towards respecting the speed limits



In all countries the majority of both target groups are in favour of respecting the speed limits under all circumstances. However, the pedestrians express this opinion significantly more often.

According to our interviews, the reasons for respecting the limits or not, are various:

The most frequent arguments for respecting the limits by both groups are:

- because of safety reasons
- they make sense
- they function as guidelines and
- there is an obligation to respect the law

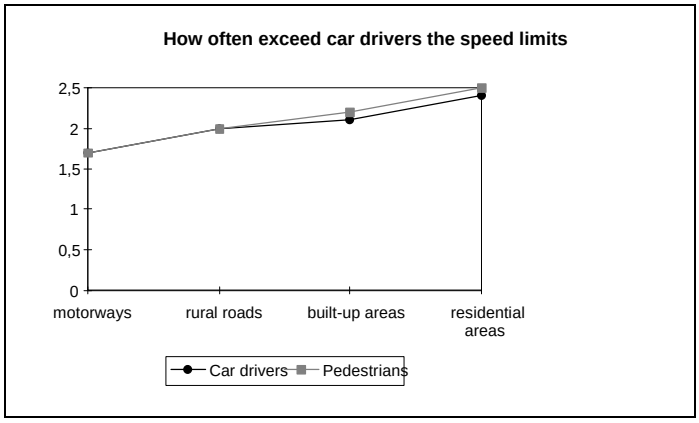
The most frequent arguments for not respecting the limits are:

- they are not appropriate to the situation
- they are not reasonable under good conditions
- they can function as an obstacle when being in a dangerous situation and
- the drivers are able to assess the situation for themselves

15.2.3.2 Frequency of exceeding the speed limits

To get to know the differences in experiencing the actual situation, car drivers and pedestrians were asked to answer the question "How often do you think that car drivers exceed the speed limits?" on a rating scale from 1 to 5.

Graph 10: Mean of answers by car drivers (N=630) and pedestrians (N=564) to the question "How often do you think that car drivers exceed the speed limits (1= very often, 5 = never)?"

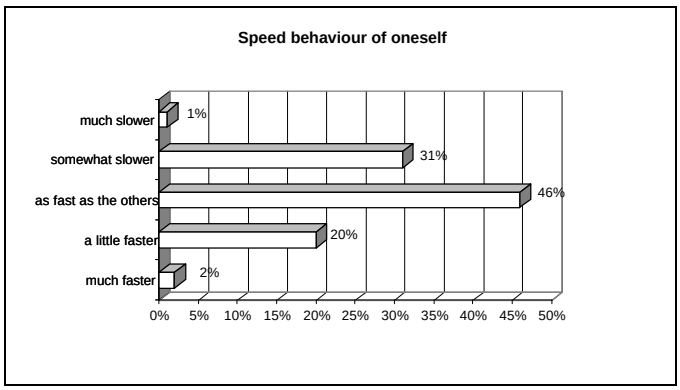


Both groups obviously share the same opinion, namely that car drivers exceed the speed limits often and on all types of road.

15.2.3.3 One's own speed behaviour

The question "Compared to other car drivers, how fast do you drive" was asked to give an overview of the self assessment of car drivers concerning their own speed behaviour.

Table 19: Answers of car drivers (N=464) to the question "Compared to other drivers, do you drive..."



46% of the respondents claim that they drive as fast as the other car drivers, and 22% that they drive faster as the other car drivers. 32% tell that they drive slower.

One can summarise that car drivers choose an inappropriate speed rather often, according to their own assessment of behaviour (=faster than or as fast as the other drivers who often drive to fast, as we have learned above). When formulating arguments addressed to different target groups, one can refer to these results.

15.2.4 Explanation for and goals of one's own behaviour

According to literature, "sensible behaviour" is often accepted and even asked for on a theoretical level. But when it comes to practice, context aspects (situational variables, etc.) affect behaviour more than the general, more abstract attitudes. Praschl et al. (1994) have demonstrated this with respect to mode choice. We

wanted to know whether a similar perspective is valid with respect to chosen vehicle speed.

15.2.4.1 Reasons for neglecting the speed limits

According to current literature (for a summary see Risser & Chaloupka 1995) a list of possible motives for neglecting speed limits was presented to both target groups.

Pedestrians agree with car drivers in two of the most important reasons why speed limits are neglected. "**To save time**" (P[3]=42%, CD[4]=36%) and "**because they are in a hurry**" (P=39%, CD=45%). The third most important reason pedestrians mention was "**because car drivers are not aware of the problem**" and in order "**not to disturb the traffic flow**" (both are agreed with by 25%), while car drivers mention "**because there is little traffic**" (28%) .

Both pedestrians and car drivers refer most frequently to the factor "time" when asked for reasons for neglecting speed limits. Situations or circumstances where time is lacking seem to be the most obvious context aspects where speed limit infringements may be expected.

15.2.4.2 Attitudes towards driving with high speed

We also concentrated on the attitudes of car drivers and pedestrians towards driving with high speed.

The argument which both groups agree with most frequently is "**it is dangerous**" (more than 85%). With the statements "**it is aggressive**" and "**it is reckless**" more than 60% of both groups agree with. However, much more pedestrians consider speeding as being reckless (P=75%, CD=62%), which reflects a significant difference between pedestrians and car drivers.

15.2.5 Supposed motives

The results in the following will show, whether it is possible to find reasons for choosing inappropriate speeds different from those under 3.4, when asking in a projective way, i.e., when asking for supposed motives of other road users.

We started from the assumption that the behaviour of others would be assessed more critically than one's own, and furthermore that the assessment of one’s own contribution to the problem would not be considered being of such great importance than the contribution of others.

15.2.5.1 Supposed motives for exceeding speed limits and ones' own motives

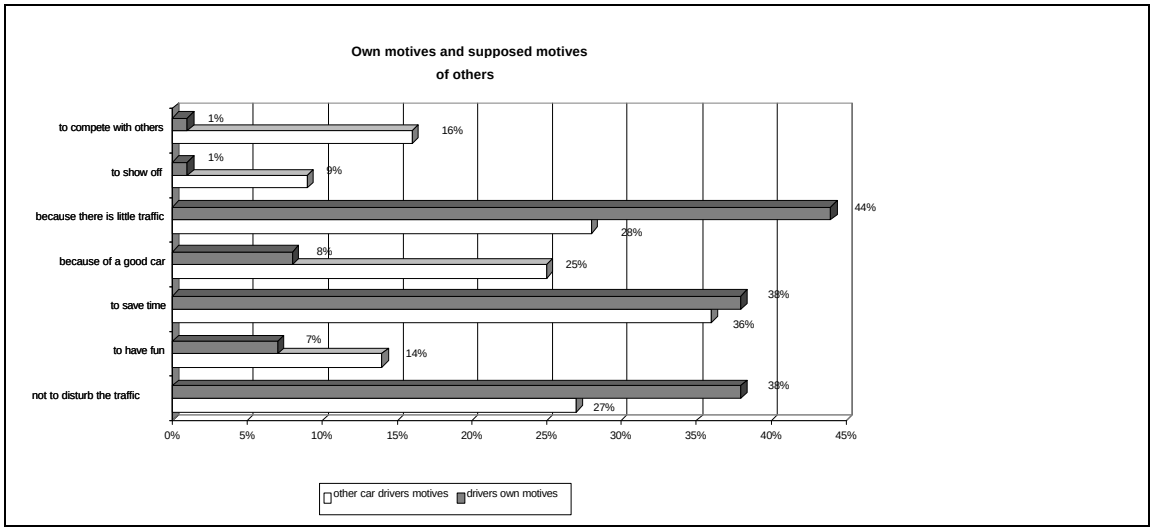
The interviewed car drivers were asked for reasons for exceeding speed limits attributed to ones own behaviour and that of others.

The following graph refers to the most interesting answers:

[3]P = Pedestrians

[4]CD = Car drivers

Graph 12: Reasons for neglecting the speed limits for oneself and the estimation why other car drivers do not stick to limits (N= 464)



The three most important reasons are "**to save time", "because there is little traffic**" and in order "**not to disturb the traffic flow**".

"Because there is little traffic" is more often mentioned as a motive for oneself than for the others. The noble motive "not to disturb the traffic flow" is attributed more often to oneself.

"To have fun", "because of a good car", "to show off", "to compete with other drivers" are reasons not mentioned that often, but when they are, they are almost often attributed to other car drivers.

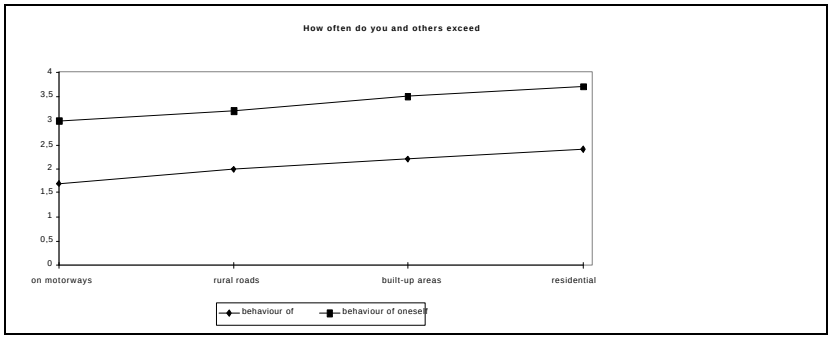
15.2.6 Frequency of exceeding the speed limits

The following results are interesting with respect to the car drivers' statements concerning their contribution to the actual situation (see chapter 3.3.3). There, more or less half of all car drivers state that they drive as fast as the others.

However, when asking car drivers in a more direct way, they again attribute speed limit infringements significantly more often to other car drivers than to themselves.

The following graph displays the mean values of the answers to the questions "How often do other car driver exceed the speed limits" and "How often do you exceed the speed limits yourself?".

Graph 13: Mean of answers by car drivers (N=464) to the question "How often do you think that other car drivers and yourself exceed the speed limits (1= very often, 5= never)?"



15.2.7 Acceptance of the present situation

With respect to speed and speed problems we wanted to find out, how strong the necessity for a change is felt respectively how the target groups assess the actual situation in traffic.

The results will constitute the basis for developing arguments which reach a high approval by the respondents. They give hints into which direction communication should go, when "selling measures" to the public. The discussion and argumentation will be facilitated by knowing and/or using arguments that meet approval. They can even help to improve or establish acceptance for certain measures which are considered not to be very popular, yet.

The results of the questions referring to the advantages of lower speeds show that car drivers know about the advantages. Above all, they know about the advantages for the interaction with pedestrians. Arguments which contain the safety aspect are obviously agreed upon, verbally with more than 70%.

Pedestrians know about these advantages concerning safety even better than car drivers (more than 80% agreed with those arguments). Obviously they are also aware of the advantages of lower speeds for a good "social climate" in the city and the "climate" between car drivers and pedestrians.

The largest differences between car drivers and pedestrians emerge in connection with arguments referring to "life quality in the city" (P agree with more than 70%, CD agree with more than 50%).

However, in their role as residents car drivers do not differ from pedestrians when they are asked about negative consequences of road traffic for life quality. Both groups name impairments by noise, by air pollution, impairments of children's mobility and safety with more than 70%.

15.2.7.1 Appropriate speed in theory and in practice

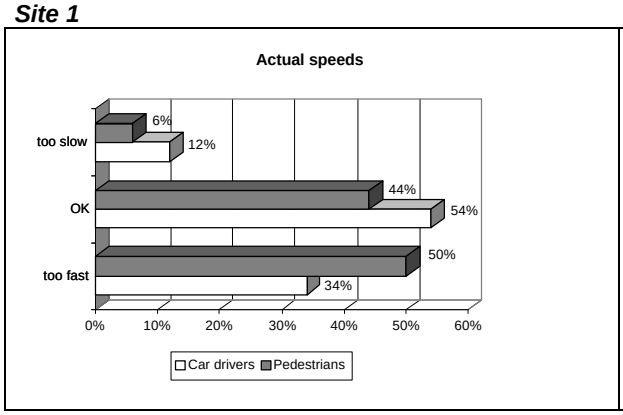
To get to know whether there are differences between car drivers and pedestrians concerning "appropriate speed", the question was first asked in a non-standardised way. Then, speeds were discussed in a more standardised way referring to the four sites that we had chosen for analysis in the involved countries (for the definition of sites see chapter 2).

Summing up, the majority of both groups' answers refer to the category **"according to the traffic-, weather-and infrastructure conditions".** But drivers give this answer more frequently. More pedestrians than drivers mention: **"that everybody feels safe", "to avoid dangerous situations", "according to the traffic participants", "to be able to stop at any moment"**.

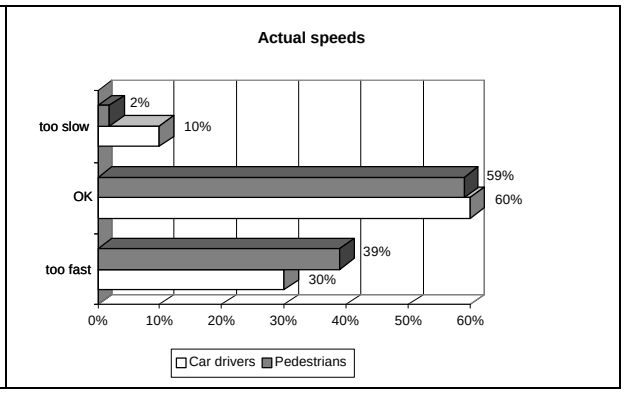
In assessing the actual vehicle speeds at the four relevant sites, pedestrians predominate in experiencing speeds as too fast.

Graph 14-17: Car drivers' (N=630) and pedestrians' (N=564) assessment of vehicle speeds at 4 relevant sites

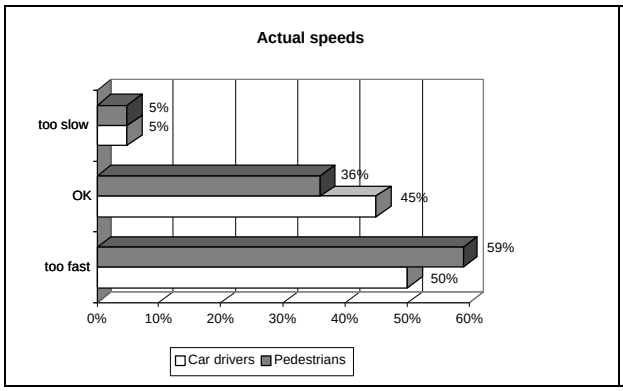
Site 1



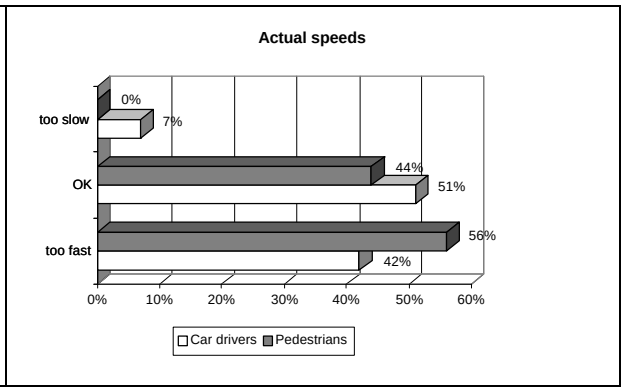
Site 2



Site 3



Site 4



As far as specific sites are concerned, it can be said that more pedestrians than car drivers assess are too high, because this is

- reckless towards pedestrians and cyclists

Driven speeds are OK, because
it is not driven speeds as being too high.

Common arguments for both target groups are:

- Driven speeds possible to drive faster due to the actual traffic situation, anyway

Driven speeds are too slow which
- causes traffic jams

At site 3 (non regulated intersection where car drivers and pedestrians have to interact) pedestrians also mention very often "because the intersection is not regulated" when assessing the speed as too high.

15.2.7.2 Are measures to reduce speeds necessary?

From discussions (focus-group interviews) with road users (Chaloupka et al. 1997, Risser et al. 1992, Risser et al. 1993), we know, that reduced and better adapted speeds are often asked for in order to provide improved life quality, including better environment, improved safety and security, an improved, or less impaired mobility of pedestrians/cyclists, and a better living environment for residents.

According to our interviews more pedestrians than car drivers are in favour of taking measures in order to achieve a change of speeds.

Pedestrians think more often that measures should be taken at sites where they have to interact with drivers most frequently (site 3: P=53%, CD=47%) viz. at sites where they are confronted with a higher speed and where they have to interact with drivers (site 1: P=53%, CD=35%).

At site type 2 the majority of the pedestrians is satisfied with the actual situation. This is one of the sites, where a higher speed is simply not possible due to infrastructural conditions.

To get to know which changes in speed road users would wish, they were asked whether speed should be lower or faster than now, or according to the speed limit.

A clear majority of the interviewees were in favour a speed reduction, but more pedestrians than car drivers think so at site types 1, 2 and 4.

At site 3 there are slightly more drivers who can think of a speed reduction. On the other hand, there are more pedestrians who argue for a driving speed according to the speed limit.

Only a few of the respondents are in favour of an increase of speed, but no one of the pedestrians' group can imagine a higher speed than the actual one at site 3 and site 4.

15.2.8 What speed reducing measures are considered promising?

Public awareness-measures alone are neither effective, nor are they asked for by the public very often[5]. But: This refers to what is considered promising in theory. When it comes to acceptance of measures in practice, we expect that car drivers do not really like measures that affect behaviour directly.

A list of speed reducing viz. speed keeping measures (among others taken from Vàrhelyi 1996) was presented to the interviewees. They were asked to say whether they considered them effective or not on a rating scale from 1 to 5.

[5]This does not mean that we consider public-awareness measures not being important. However, they should always be carried out together with factual changes (in laws, infrastructure, vehicles, etc.), as without such measures they are too abstract and do not demonstrate any decisiveness on the side of the authorities.

Table 1: Car drivers' (N=630) and pedestrians' (N=564) attitudes towards the most efficient measures for achieving appropriate speeds (1=very good, 5=not good at all).

EFFECTIVE MEASURES FOR ACHIEVING APPROPRIATE SPEEDS										
	very good		rather good		not so good		not good at all		I do not know	
	CD	P	CD	P	CD	P	CD	P	CD	P
a) Speed humps	28%	35%	32%	32%	16%	14%	18%	12%	6%	7%
b) Rumble strips	17%	20%	32%	30%	17%	17%	21%	17%	13%	18%
c) Stationary radar	28%	36%	30%	32%	18%	12%	13%	9%	11%	11%
d) More enforcement by police	31%	**40%**	30%	32%	17%	11%	13%	10%	9%	7%
e) Non stationary speed checks	26%	**39%**	31%	29%	16%	8%	15%	8%	12%	16%
f) More and better road paintings	**41%**	38%	28%	28%	15%	11%	16%	8%	9%	15%
g) Better information about the relationship between speed and accident risk	**41%**	38%	26%	28%	12%	14%	9%	8%	12%	12%
h) Automatic speed limiter in the car that cannot be overridden	20%	27%	13%	14%	12%	10%	34%	27%	21%	22%
i) Automatic speed limiter in the car that can be overridden	13%	15%	21%	19%	16%	13%	27%	25%	23%	28%
j) More frequent and perceivable signs	**42%**	36%	28%	30%	12%	15%	11%	9%	7%	9%
k) Higher fines for speeding	26%	35%	24%	25%	16%	16%	24%	13%	10%	11%
l) Clear and well indicated speed limits	**49%**	**49%**	29%	29%	8%	6%	6%	5%	8%	11%

The results show very clearly that pedestrians more often than car drivers consider measures that directly affect car drivers behaviour as being effective.

Car drivers claim that measures, that do not affect their behaviour directly, are most effective.

Measures that pedestrians consider most effective are: "**Clear and well indicated speed limits**", "**more enforcement by the police**" and "**non stationary speed checks**".

Measures that car drivers consider most effective are: "**more and better road paintings**", "**better information about the relationship between speed and accident risk**", "**more frequent and perceivable signs**" and "**clear and well indicated speed limits**".

The most significant differences between the groups can be found with respect to: "Speed humps", "more enforcement by the police", "non stationary speed checks" and "higher fines for speeding"; all these measures are clearly preferred by pedestrians.

Significant differences are also found in connection with the measures "stationary radar" and "automatic speed limiter that cannot be overridden". More pedestrians than car drivers consider them as effective and less pedestrians consider them as not effective.

The questions with respect to both functions of the speed limiter are answered with "I do not know" rather frequently (20%-30%). The explanation probably is that such a measure is not known at all by the public and that it is difficult to visualise a speed limiter.

Many of the car drivers think that neither of the functions of the speed limiter are good at all. The limiter that cannot be overridden is met with even more disapproval by them, however.

Pedestrians look at the speed limiter more positively. At the same time, they consider a speed limiter that cannot be overridden as more effective than the one that can be overridden.

15.2.9 Acceptance of measures

Many car drivers usually consider their own decisions with respect to speed choice as appropriate. Thus, they probably are reluctant to accept measures that affect their behaviour directly (like efficient enforcement, humps, etc.), because they probably think that they do not need them.

Therefore we wanted to analyse the differences between car drivers estimation of effective measures (it can be assumed that they will answer the question from the perspective of which measures would be effective for other car drivers) and measures that they themselves accept best.

15.2.9.1 Acceptable measures

The table below displays the attitudes of car drivers towards different measures.

Table 2: Car drivers' (N=630) attitudes towards the most effective and acceptable measures for achieving appropriate speeds.

ACCEPTABLE MEASURES FOR ACHIEVING APPROPRIATE SPEEDS					
	very acceptable	rather acceptable	not so acceptable	not acceptable	I do not know
a) Speed humps	27%	28%	16%	19%	10%
b) Rumble strips	26%	27%	17%	18%	12%
c) Stationary radar	24%	35%	17%	12%	12%
d) More enforcement by police	26%	27%	22%	13%	12%
e) Non stationary speed checks	19%	26%	24%	15%	16%
f) More and better road paintings	**52%**	24%	10%	5%	9%
g) Better information about the relationship between speed and accident risk	**45%**	28%	9%	6%	12%
h) Automatic speed limiter in the car that cannot be overridden	14%	12%	18%	37%	19%
i) Automatic speed limiter in the car that can be overridden	17%	18%	20%	24%	21%
j) More frequent and perceivable signs	**47%**	27%	12%	8%	6%
k) Higher fines for speeding	19%	22%	21%	24%	14%
n) Clear and well indicated speed limits	**59%**	27%	4%	4%	6%

It is interesting to see that the acceptance of measures which do not affect behaviour directly is significantly higher than the effectiveness attributed to them is considered (see 3.7).

The acceptance of measures which affect driving behaviour directly, is scaled lower than the effectiveness attributed to them. All these differences are significant.

15.3 CONCLUSIONS

The results derived from the interviews showed very clearly that traffic safety implications are aspects all road users consider as being important, when they are asked about the importance of speed limits and road users' compliance with them. But car drivers connect dangerous situations with the presence of other car drivers and not so much with their own behaviour.

However, in some respects, car drivers agree that they contribute to speed problems, mostly in connection with aspects of hurry and the wish not to disturb the traffic flow. Arguments should be related to these aspects and combined with another perspective; namely, that car drivers are well aware of the fact that inappropriate speeds, to which they contribute by giving room to their own hurry, cause serious problems for pedestrians and residents.

The addressed persons should also be reminded of the fact that speeding occurs often and everywhere. I.e., it is not a marginal problem.

Our results have also shown that one should focus on the advantages of lower speeds, as well, when one communicates with the public, and what they can contribute to an increase of life quality for residents. Since car drivers would benefit from a better speed management themselves in their role as residents, the usefulness of traffic safety measures for residents should be made more transparent, viz., used in the argumentation that accompanies implementation.

Another way to increase the acceptance of traffic safety measures is to transport the message that, even if they are felt as being restrictive by oneself, better adapted speeds help to improve the situation of others.

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