

## POPULATION'S REACTION ON ROAD TRAFFIC NOISE: A FIELD SURVEY

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### Introduction

Noise is one of the most important environmental problem in the industrialized and the developing countries.

When we investigate noise sources, the traffic seems the most wide-spread and most annoying environmental source.

The developing of the motorization the road traffic noise touches more and more people in Hungary too. It is estimated that more than 40% of citizens of our country is living in area where the traffic noise is higher than desirable. The report of the Organization of Economic Cooperation and Development (OECD - Noise abatement policies for the 1990s. Geneva, Switzerland, 1991.) divides this area into two parts:

- black spots are exposed to levels ( $L_{Aeq}$ ) of more than 65 dB in the daytime
- gray areas are exposed to levels between 55-65 dB.

In 1988 the IEM's Institute for Environmental Protection was dealing with judge by citizens of the environmental immission caused by road traffic noise. This was a field survey with more than 2000 questionnaires. Its results are shown in Table 1. These values of  $L_{Aeq}$  are acceptable by more than 90% of citizens living there.

Table 1.

**The acceptable value of  $L_{Aeq}$  (dB)**

building up	time			
	04-08	08-18	18-22	22-04
1	56	62	58	53
2	51	57	54	50
3	56	60	56	50

where building up

- 1 - with family homes
- 2 - sparesley built residential and institutional area
- 3 - heavily built residential and institutional area



When these values are compared with values in report of OECD, it seems, that the judgement of Hungarian residents are similar to general judgement.

### Investigation in "black spots" areas

#### Collection of data

In 1995 we were dealing with the "black spots". We measured  $L_{Aeq}$  values continuously during 24 hours in all 203 immission points in Budapest and in 88 bigger towns of Hungary. These measuring points were along main roads where the longtime  $L_{Aeq}$  are disturbing. Simultaneously there were emission measurements in peak traffic time with counting traffic volume as a reference. At the same time we estimated the inhabitants number of this area on the basis of its building up and collected opinions of citizens living there with a short questionnaire. The questions took a direction to sex and age of answering person, moving time, his judgement about traffic and its damages in his living place and his possible arrangements against noise immission. Because the aim of this work is to establish of a new regulation for the living conditions improvement along main traffic road there were questions about exchange of windows too. In all we got 600 considerable questionnaires.

#### Evaluation

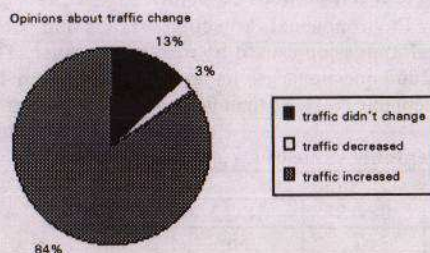
The asked people are similar to the population in Hungary as it is visible in Table 2. So this field survey is considerable as a representative one.

Table 2.

Distribution of asked people according to sex and age (%)

Age	younger than 18	between 18-30	between 31-60	older than 60
woman	1	7	36	19
man	1	5	18	13

Figur 1.



In Figur 1. there is the evaluation of the opinion about changing of road traffic in later years. The circular diagram reflects well the increase of road traffic almost on all measuring points. When the people, who answered "road traffic didn't change" are investigated from moving time point of view, it comes to light, that the greater part of this group is living there only for a few months. Persons who

more, than 3 years are living on the same place take part only 32%. So the part of answered "road traffic didn't change" to all decreases to 4%.

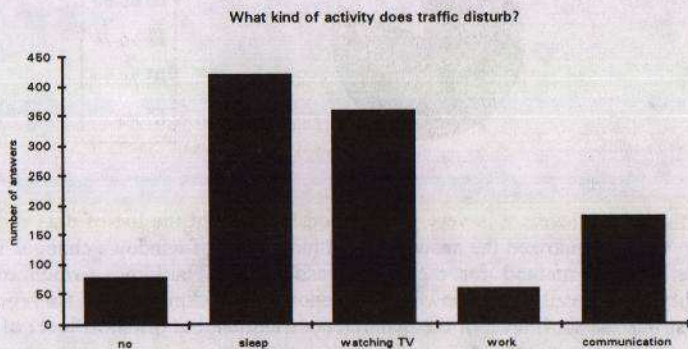
Further the disturbance of road traffic is analysed. In the question "What kind of activity disturbs the traffic" there were indicated the next activities:

- sleeping, recreation
- watching TV, listening radio
- communication, social meeting
- work

The result of the evaluation is visible on Figur 2.

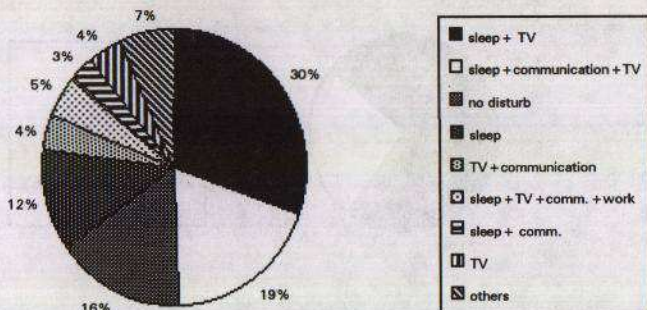
It is remarkable how many people indicated the individual amusement as listening to radio or watching TV over sleep. It is possible when more pupil or student were asked then the category "work" got more indicated. As in Hungary the mental work at home is spreading now, it is possible in future this group will get more attention.

Figur 2.



Figur 3.

What kind of activities does traffic disturb?



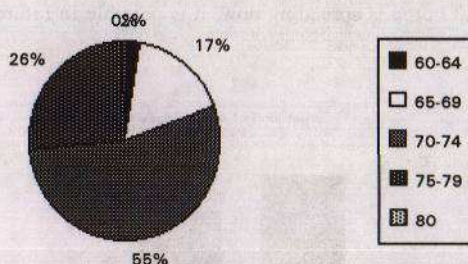


The answers containing "sleeping" (with or without "TV" or "communication") dominates - more than 60% - against any of other combinations. This is visible on Figur 3. In our opinion the group of watching TV + listening to radio is high, because the audibility is in these activities very important, and in this activities it isn't any repetition possible.

At the time of field survey we measured the  $L_{Aeq}$  in the peak traffic time to order noise level to the disturbance. It is shown on Figur 4.

Figur 4.

Noise level (dBA) in the peak traffic time



Seeing these high levels it is very giving food for thought the list of data shown Figur 5. This summarized the answers about judgement of windows change. This is a well-known method for the better insulation of buildings, when other possibility isn't available. Known the economical background it isn't being thunderstruck the short level of the material contribution, but the short level of the consent of changing windows.

Figur 5.

Opinion of windows change

