THE ACCIDENT IMPENDENCY IN THE MUNICIPAL PUBLIC TRANSPORT SERVICES IN CRACOW

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1. INTRODUCTION

Nowadays, we observe a number of negative consequences resulting from this rush development of the motor transport technologies and technics, of course besides some particular advantages for the road users. The more motor vehicles appear on roads, the bigger is their general density on roads, and in a consequence, the common risk impendency. Additionally, some other negative side-effects appear along with the increase in the motor transport, called generally: environmental pollution.

In particular, the polluted environment affects badly the inhabitants of great municipal agglomerations, where the motor traffic is exceptionally intense. The task of the local authorities is to reconcile the contradictory interests of the city inhabitants with these of the individual road users. A sort of the intermediate solution is the common transport service.

This solutions secures a sufficiently free translocation, and on the other hand - the reduced motor traffic does not pollute the environment that much, it does not create that much noise either. Unfortunately, the common transport service is less popular than the individual transport, and many rational arguments emphasising advantages of the common transport service seem not to persuade them.

While analysing and comparing the common transport service in Poland and in countries with a higher motor transport rate, we see a very noteworthy character of the Polish transport service. Contrary to other European countries like Austria, Germany, Italy, The Netherlands, the Polish common motor transport is still leading in Poland. Especially in the towns, cities, the number of persons using buses or tramway exceeds three if not four times the number of persons driving their own motor vehicles. This status quo has been changing recently for the worse of the common transport service. In late eighties, a distinct rise in the number of private motor vehicles per capita occurred. Thus, an intermediate solutions must be found to keep the use of the common transport service unchanged under the circumstances of a spontaneous development in individual transport, otherwise this dangerous situation as observed in other countries will slowly become a part of our life in Poland.

This task seems inasmuch difficult as the national transport agents (with some exceptions) have shown no interest in improving their services in order to meet the requirements and wishes of the customers. Usually, our bus and tramway stock is rather disused and thus creating a certain safety menace if not the life danger whereas the everyday life in a city is impossible without an effective common transport service. Short breaks or even disturbances in transport service functioning prove this necks-silty. Thus, if we want to make the common transport services in cities competitive with the individual transport, and the if positive approach to them has to be strengthened, then these service agents must really come up to the expectations of their passengers. The most important factors to be introduced first are: safety, efficiency, punctuality and low prices.

2. OBJECTIVES OF THE STUDIES

Our studies comprise several objectives. First of all, it was necessary to answer a very important question: what is the opinion of the passengers about the common transport service?

Various approach of the passengers has been compared as to the real danger and menace evaluated on the basis of the available accident data. This comparison should enable the statement in what technological and organisational ranges the road users notice the life or health danger caused by the municipal transport service? Accident impendency and physical injury danger referred only to the situations emerged in the bus/tramway or during getting of/on the bus/tramway. Our studies covered the accident impendency in the tramway and buses of the Tarnów and Kraków municipal transport networks. Due to discrepancies in the condition of the tramway/bus stock in these cities, we considered both constructional and potential reasons of health danger and accident impendency.

Two research methods have been used to pursue our objectives: Standard form of inquiring and quantitative analysis of the chequered pattern of accidents available in the Municipal Transport Service (referred to as MPK) of Tarnów and Kraków. 203 persons were inquired: 150 in Kraków and 53 in Tarnów.

The majority of accidents occurred to women, according to the studied accidents. As to the age of inquired persons, it was proportional to the general number of persons using the common transport service. Thus, dominant were persons aged 30 to 50 years.

The statistical data taken from the accident charts comprised three years: 1989, 1990, 1991, 50 they included all accident impendency cases registered by these two transport agents in the respective periods. Accidents events other than registered by the accidents statistics were completed by the information taken from the inquire forms.

3. RESULTS OF THE STUDIES

The obtained results were quantitatively and qualitatively analysed including the application of the covariance and the Student's test. Thanks to it, four groups of issue scopes could be selected.

3.1 Passengers' subjective impendency

In table 1 there are detailed data related to the aspects discussed above (factors contributing to the accident genesis):

Table 1. Passengers, subjective impendency

1.	Individual risk	23 %
2.	Slippery floors and/or seats	18%
3.	Pointed edges	12%
4.	Improperly mounted elements of auxiliary equipment	11 %
5.	Dangerously protruding parts of the vehicle body	10%
6.	Sharpedges steps	7%
7.	Detached floor covers	5%
8.	Insufficient number of handgrips or even their lack	4 %
9.	Dismantled movable barriers	4%
10.	Defective doors	3%
11.	Too how installed ticket dating machines	3 %

The explicit conclusion arising from this data is that the passengers perceive two qualitatively different problems as the greatest menace for their health and life. The first problem is connected with the individual risk level represented by the bus/tramway driver's driving mode. This scope includes such elements of the driver's behaviour as: careless driving, sudden braking, speeding in the curve or while overtaking. These elements constituted 23% of all indications. A separate group of issues comprises indications referring to the proper vehicle equipment and quality of the vehicle make. It is worth mentioning in this place such factors as: slippery floors and/or seats, improperly mounted elements of auxiliary equipment, pointed edges, dangerously protruding parts of the vehicle body, sharp-edged steps, detached floor covers, insufficient number of handgrips or even their hack, dismantled movable barriers, defective doors (which open during the drives in most unexpected moments), too how installed ticket dating machines, other protruding sharp-pointed parts on the external body of the vehicle, etc. Of course, our respondents revealed some positive aspects of the common transport system which increase its safety.

In Tab. 2 these aspects are listed in the way which outlines the contrary attitude of the entire issue.

Tab. 2. Important features of safe motor vehicles

1.	Driving comfort	27%
2.	Effective noise suppression	22%
3.	Automatic door control	18%
4.	Safe and proficient bus	11%
5.	Comfortable and useful handgrips	11%
6.	Low steps	11%

Passengers believe that the most important features of a safe motor vehicles are: driving comfort, effective noise suppression, safe and proficient bus/tramway driving, comfortable and useful handgrips, how steps, automatic door control. It is also worthy stressing that the accident impendency extend as to vehicles engaged in the common transport system depends upon technical condition of the stock as well as upon its technical wear level. This fact has been revealed by the valuation of the safety of different vehicle makes, for example VOLVO bus was rated as the best, i.e. the most safe bus, whereas the Polish bus AUTOSAN and licensed product BERLLIET were rated very how as to their safety.

3.2 Accident impendence of objective occurrence

As mentioned above, all empirical materials assumed to bring an answer to our question set at the beginning of the studies were taken from the accurate analysis of the accident records.
All accidents relevant to the periods in hand can be classified among four groups of issues:

1. Persons' accidents including passengers. These accidents constitute most certainly the greatest impendence (83% among all impendency types)
2. Accidents and collisions with the „strange" motor vehicles
3. Derailment of tramway, situations when a bus turns aside from the road.

In the year 1989 the number of registered accidents, when people got injured, was the greatest, and the lowest - in 1991. Though, this gradual decrease per annum in the general rate of accidents is rather formal. Parallel to this drop in accidents number, the number of users of the common transport networks is on the severe down-grade. This is a very detrimental phenomenon that calls for actions and certain undertakings to maintain the leading position of the common transport services.

We can systematise the typical accident impendency among several groups of impendency arts typical for the municipal common transport service. The relations are shown on Fig. 1. Dominant are the accident impendency types which usually occur on the bus/tramway stops (62%), then accidents on the straight sections of a road, and the third group are accidents inside the transporting vehicles. As to the latter group, the real course of the accident is often very falsified. The accident records deliver information on only 30% of all occurred accidents where passengers were involved, and there are always these most dangerous and ugly accidents or collisions with buses/tramway involved. The majority of slight or insignificant injuries as an effect of the use of common transport means are never (or very seldom) reported by passengers, thus they are never registered in the statistics of accidents. And this majority includes 70% of all accidents.

In the group of slight and insignificant human body injuries and of trauma, dominant are head and face injuries (42%), then limb trauma (3 9%), spinal column injuries and/or internal haemorrhage appear not so often. These miserable events could be caused by jamming in the door (30% of indications), by falls inside the vehicle or even by falling out of the vehicle (what happens not so rarely). Elderly or very old passengers are victims of such events three times more frequently if compared with people of other groups of age.

3.3 Expectations of the passengers for the public transport

These expectations refer to three issues that are essential according to the statements of all interviewed persons:

1. Organisational improvements in the common transport system (70% of all indications)
2. Implementation of better and more current technologies and technical solutions in respect to the entire motor vehicle stock of the common transport system
3. Additional constructional conveniences inside the vehicles

The first group of suggestions needs deeper consideration, because they clearly prevail among all others. In order to meet all contemporary requirements and expectations, the carrier must
improve the work organisation of the municipal transport agents. The passengers are most annoyed with the fact that the time-table of almost all regular bus/tramway lines does not respect the so called traffic rush hours, the frequency of the drive courses does not agree with general wishes, moreover there are delays or too long breaks in courses. Furthermore the passengers claim that stops are improperly situated, the translocation of passengers inside the vehicles is badly regulated or there is no control of this translocation, sluggishness and poor traffic capacity, drivers' speeding in the curves or while coming up the stop.

3.4 Legal regulations referring to the common transport system

The most astounding fact revealed by our studies is that 90% of inquired persons believe the common transport system does include an accident impendency, and only a split percent of them know their rights under the traffic rules and legal regulations in force. However, these legal regulations situate the carrier in a more comfortable position than the passenger. This is because of legal deficiency, incoherence and inaccuracy in the law. Very often, the insurer has to be responsible for the injury or loss as the consequence of the use of the common transport means. In this situation, it seems to be meaningless whether the accident insurance is compulsory or free. In the Polish legislation no regulation exists as to the terms of the contract between a passenger and a carrier, the terms ensuring equal rights for both parties. The present regulations favour the carrier and allow him to impose conditions. Furthermore, the rights of the passengers as prescribed in the valid regulations are not published and thus the passengers don't know them or have only an slight idea about them.

On the other side, even if the harmed party - usually a passenger - is able to vindicate his rights, the damage compensation as well as fines imposed on the transport undertakings are very how and rather not onerous.

Figure 1 shows where the accidents in connection with the use of public transport in Cracow happen:

Figure 1: Distribution of accidents in connection with public transport in Cracow 1989-1991