

## *PEDESTRIAN SAFETY IN THE FIRST NATIONAL SAFETY PROGRAM IN CROATIA*

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On June 17-th the Croatian Government announced the National programme of road traffic safety for the next two years. Its general goal is reduction of road traffic accidents and all their consequences.

### ***Why a programme?***

The road traffic situation in the country is very bad despite the trend of decreasing traffic deaths since 1990. In comparison to western European countries accident risk and dominantly fatal accident risk is 5 to 7 times higher here and that is regarded quite unacceptable especially concerning all ambitions our country has in becoming a touristic one.

It is a country of 56 000 km<sup>2</sup>, of 4.7 million inhabitants, about one million registered motor vehicles and 1.2 million drivers licences.

The length of the road network is ca 30 000 km, is mostly asphalt and concrete and the yearly number of all accidents is ca 60 000, with an increasing trend. The number of injured, slightly or seriously is about 17 000, and the number of traffic deaths is still higher than 800 per year.

All of this data is seen in the following figures; (Fig 1 to 5).

The predominant type of accident is side-collision with a frequency of 20%. The second one is rear-end collision and head-on. Only 5% of accidents are vehicle-pedestrian type and a third of all road accident fatalities are caused by this type of accident.

The figures as well as (almost) all the others have to be changed according to the announced programme.

Because of the main problem areas that are recognised as:

- too high speeds of the vehicles,
- too short distances between the vehicles,
- bad traffic environment entirely and especially at the certain spots,
- low level of traffic culture and red light discipline,
- unsatisfactory accident information system,

the safety programme relies upon the next strategical safety activities:

- reducing the speed and obedience of speed limits,
- pedestrian safety,
- black spots treatment, and
- improvement of accident information system.

Fig 1

# CROATIA CHARACTERISTIC FIGURES

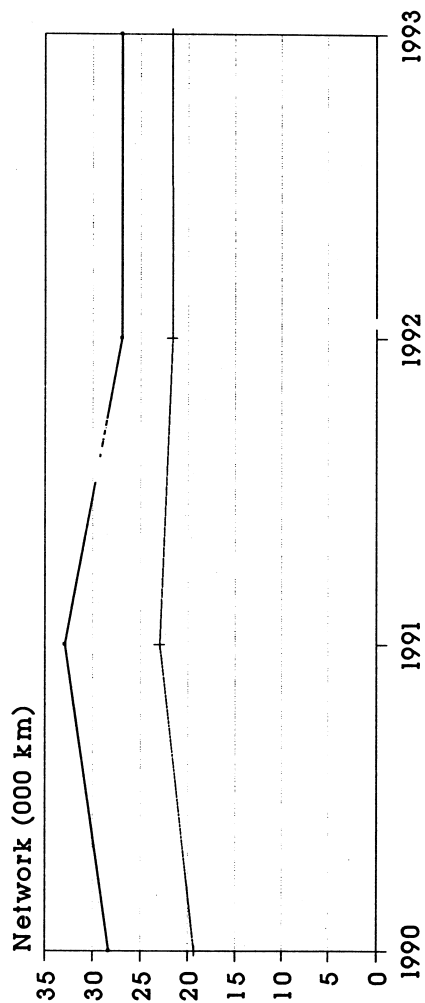
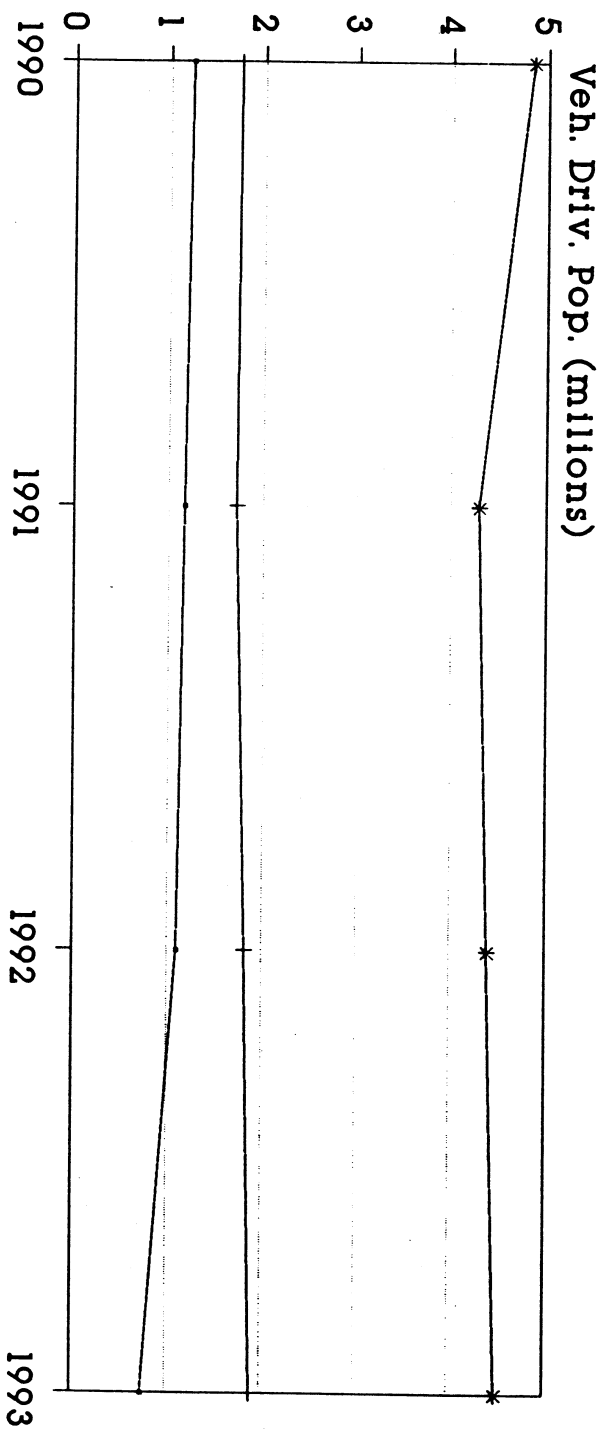


Figure 1  
— Total road network —+— Asphalt or concrete

# C R O A T I A

## CHARACTERISTIC FIGURES



**Figure 2**

— Registered vehicles    + Drivers    \* Population

Fig 2

Fig. 3

# C R O A T I A

## CHARACTERISTIC FIGURES

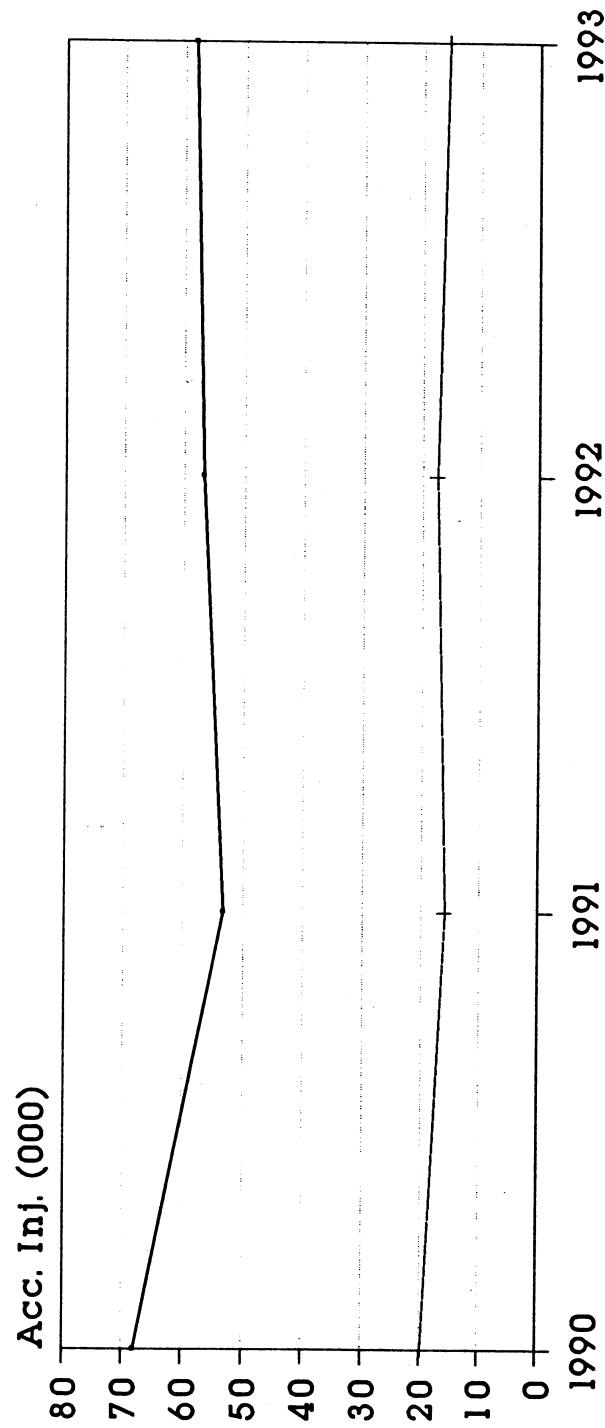


Figure 3  
— Accidents — Injuries

# TRAFFIC ACCIDENTS SEASONAL VARIATIONS

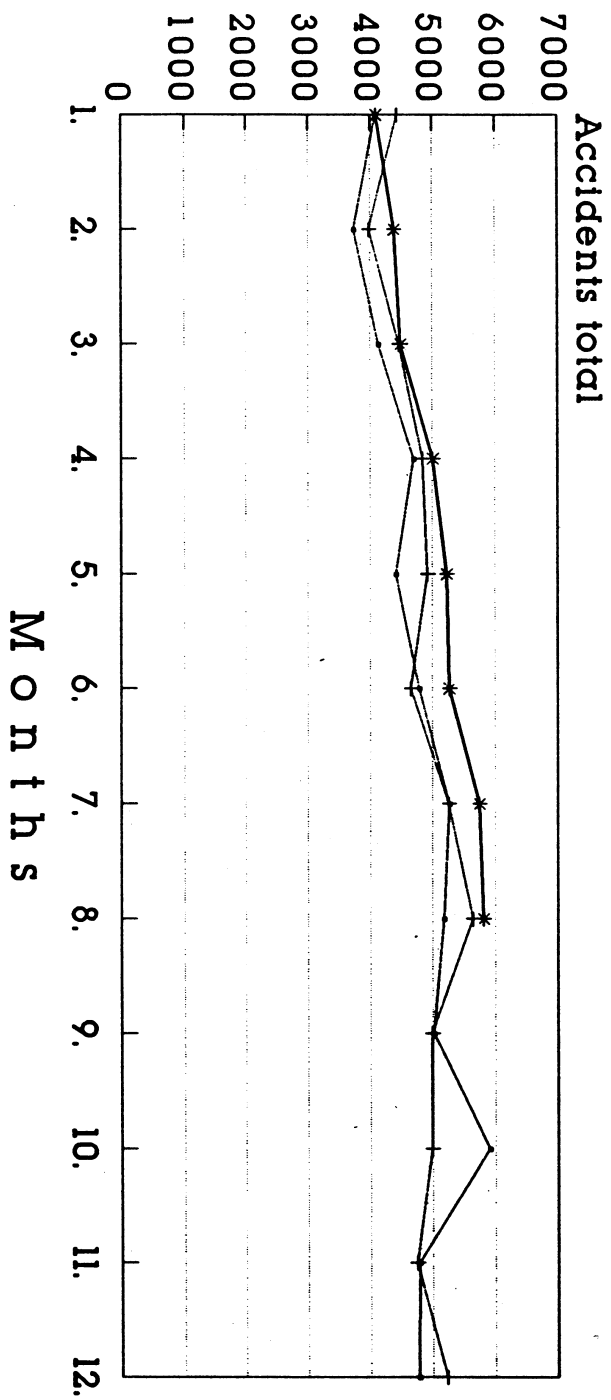


Figure 4  
—◆— 1992    -+- 1993    —\*— 1994

Fig. 4

Fig. 5

# CROATIA CHARACTERISTIC FIGURES

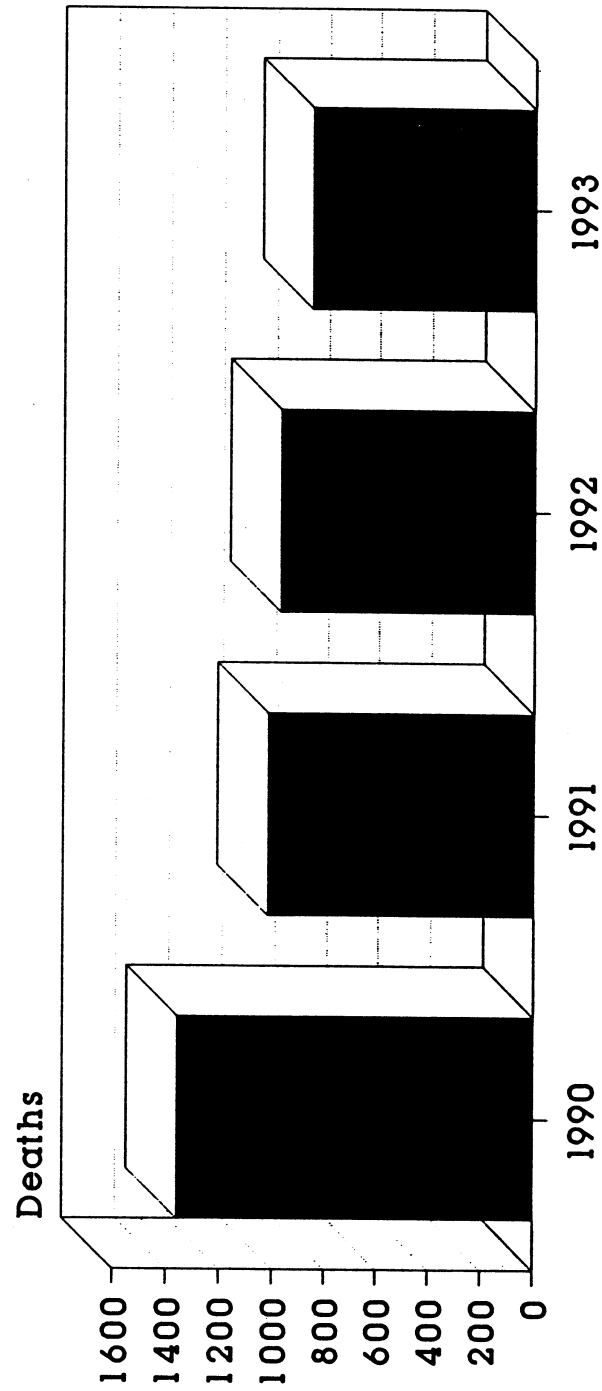


Figure 5

Deaths in accidents

The objectives in the term of the mentioned safety activities are:

- exceeding of speed limits as well as the speed variations in the traffic flow not higher than 10%
- red light discipline of 100% for drivers and to the level that is around „not-endangering” for the pedestrians,
- removing 30% of „top” black spots in major towns as well as on the rural roads,
- designing of accident information system with the distributed processing, supported by the geographic information system and global positioning.

The dead line is (not more than) two years.

The organisational, technical and financing infrastructure of the programme is being solved under the given conditions.

In the safety area named „pedestrian safety” (with regard to accident portion see fig. 6) several tasks have to be carried out. Namely;

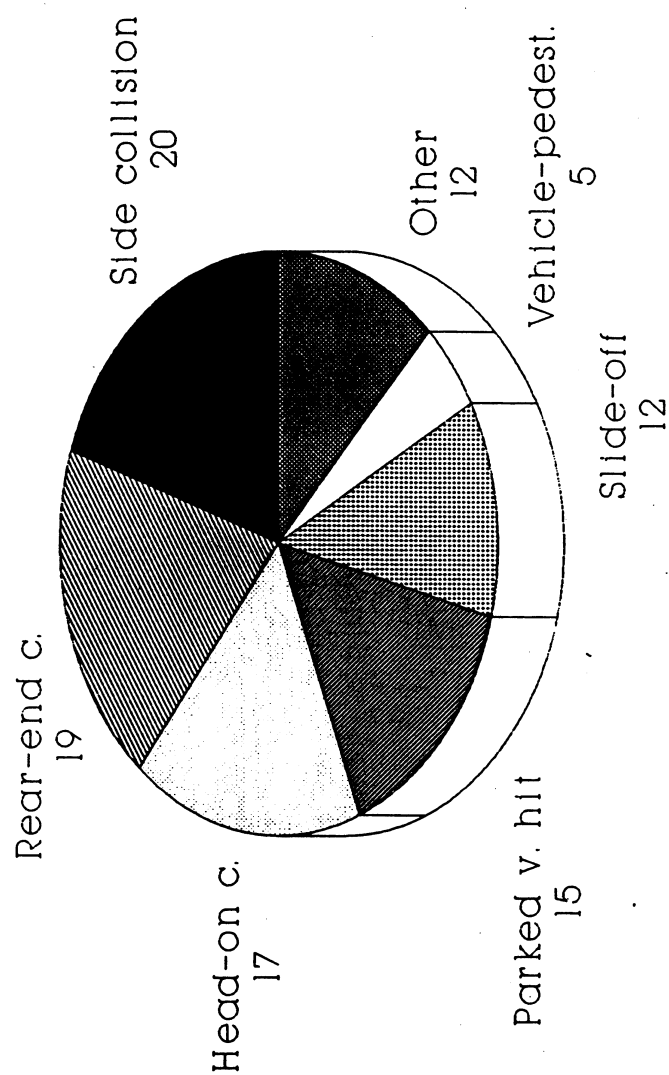
- improvement of awareness of the pedestrians for the potential consequences of the behaviour they habitually have; (red light (in)discipline, passing of roads distant of zebra crossings, walking in the dark without caring any light or retro-reflective, etc,
- improvement of traffic engineering solutions aimed to pedestrians; (shorter signal cycles, passing of the road in two or more phases, properly positioning of pedestrian crossings, lower speed limits, etc.),
- reducing of possible risks for the pedestrians in the phase of land-use and town planning phase and
- using of traffic calming measures for the reducing of pedestrian safety risk, in residential areas as well as in the school zones.

In the last mentioned field there have been some positive experiences that should be followed on. The use of traffic calming measures has started just at the beginning of this decade despite the fact that some legislative background has not been stated yet. In many cases it was almost the only possible solution aimed at reducing non-acceptably high level of traffic risk for pedestrians. Although, the majority of measures that have been used were „humps control speed” the other measures, like rumble strips, islands, roundabouts and bottlenecks have been used as well. Using such measures the traffic risk was reduced by 36% as well as the number of traffic accidents accordingly.

The first case of humps control speed application in our conditions was the service road in front of Zagreb Fair, in length of 2.7 kilometres, aimed mostly for the access to the Fair as well as to the shops, bars, discotheques in the neighbourhood. The next results were observed as the consequence of the applied solution in the period of evaluation:

Fig. 6:

# ACCIDENTS' STRUCTURE (%)





- in the average speed of vehicles in traffic flow;  
the speed of vehicles before 55 km/h,  
the speed of vehicles after 38 km/h,
- in the 85-th percentile speed of vehicles;  
the speed of vehicles before 68 km/h,  
the speed of vehicles after 43 km/h,
- in the speed variations;  
speeds variation before 19%,  
speeds variation after 15%.

The average number of accidents before was 1 accident every 16 days; the average number of accidents after was 1 accident every 25 days.

In the evaluation period „after” of 426 days, by the accidents frequency of the period „before” about 27 accidents were expected. Actually, 17 accidents occurred and about 10 accidents were saved. If average social cost from one traffic accident is about 20 000 DM, it could be stated that total accidents costs saved this way in a year and two months period was about 200 000 DM.

The cost of the treatment together with the project was 14 000 DEM, and the duration period of treatment is at least 10 years.

Just a few investments (if any) could be characterised with the ratio of investment rentability like this. All this is one more reason the mentioned safety programme should be designed according to the economic principle as well as on the concept of synergy.