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## SHORT COMMUNICATION

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### DISCUSSION OF ROAD ACCIDENTS IN IRAN

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**Abstract** Several comments are made regarding the recent papers by E. Ayati on road accidents in Iran.

چکیده در این مقاله نظریاتی چند با توجه به مقاله اخیر آقای دکتر آیتی درباره تصادفات جاده ای در ایران ارائه گردیده است

1. I was very interested to read the two papers by Dr. Ayati on road accidents in Iran that appeared in this journal recently [1, 2]. I would like to reinforce several of the points made.

2. Ayati [1, p. 89] draws attention to the weaknesses in the traffic accident data collected by the police. There are many errors and omissions, some of which are random while others are systematic. This is true all over the world, but especially so in countries where widespread use of motor vehicles is comparatively recent. Those who would like to know more about this may be interested in the book that I have recently published on the collection, processing and interpretation of road accident data [3]. This deals with data collected by health authorities (e.g., hospitals) and insurance companies as well as by the police. There is one chapter specifically on the deficiencies of police data, and another chapter is on the special features of developing countries.

3. As Ayati [1, p. 89] points out, "Reliability in both the quality and quantity of accident reports... greatly increases the value of the data-base used for safety studies." It is to be hoped, therefore, that there will be a sustained effort to improve the accident investigation and reporting process. This effort will need to be maintained over several decades.

4. Nevertheless, improvements to road safety need not, and should not, wait until better data collection procedures have been established. It is obvious that it is dangerous to have no walkways beside busy roads, for vehicles to travel grossly overloaded, for drivers to disregard the most elementary rules of safe driving, and so on. It is not necessary to wait for research results before taking action on these matters.

5. Even in industrialized countries, where people have been accustomed to motor vehicles for one or two generations, where the roads are designed for modern vehicles

and maintained in good condition, and where the vehicles themselves are well-maintained, it is common for minor road improvements to pay for themselves within a matter of months, through the reduction in property damage, injuries, and deaths that takes place. This will be doubly true of less developed countries, where the roads are worse and so the scope for improvement is greater. (Naturally, care needs to be taken with road improvements: reduced congestion and improved traffic flow may mean higher speeds and more deaths and injuries, if the road environment is otherwise unsuitable.)

6. Ayati [2, pp. 101-102] also argues that monetization (of human life, or suffering) is necessary if a rational decision between alternative courses of action is to be made, as any decision implies that a value has been put on life. Suppose, for example, there are three alternatives, with estimated costs and lives saved as below:

A. Do nothing. Cost = 0, lives saved = 0.

B. Minor improvements. Cost = 1 (million dollars), lives saved = 10.

C. Major improvements. Cost = 10 (million dollars), lives saved = 40.

Suppose further that B is the project chosen. Then, for this to have been rational, the value of life must have been at least 0.1 (millions of dollars), because otherwise A would have been preferable. Furthermore, the value of life must have been less than 0.3 (millions of dollars), because otherwise C would have been preferable.

7. I see no way of avoiding the conclusion that putting life, injury, suffering, etc. into monetary terms is helpful to rational and consistent decision-making. Nevertheless, "Some people... argue that it is morally repugnant to attempt explicit evaluation of the safety of human beings" (Ayati [2, pp. 101-102]). That there are such people is something else I agree with, but I think there are some steps that can be taken to accommodate their point of view. They

should not be forced into calculating a single number representing the worth of a project if that calculating is a process they are uncomfortable with.

- A “balance sheet” listing the estimated non-monetary consequences of the projects under consideration can be prepared.
- The single summary number can be calculated several times, using various different values of life; one may find that the choice has only a small effect on the decision taken.
- Expenditure on safety-related improvements, and the payback from the lives and injuries saved, need to be constantly viewed in the context of other choices and expenditures not made.

8. A notable review of the estimation of the value of life is included in the book by Jones-Lee [4]: in Tables 2.2 and 2.3 are 29 estimates, derived by two types of method, “revealed-preference” and “questionnaire”.

#### REFERENCES

1. E. Ayati, *Journal of Engineering, Islamic Republic of Iran*, 2, 88 (1989).
2. E. Ayati, *Journal of Engineering, Islamic Republic of Iran*, 2, 98 (1989).
3. T. P. Hutchinson, “Road Accident Statistics”, published by Rumsby Scientific Publishing, P.O.Box 76, Rundle Mall, Adelaide, South Australia 500 (1987).
4. M.W. Jones-Lee. “The Economics of Safety and Physical Risk”, published by Blackwell, Oxford, U.K. (1989).