International Co-operation on Theories and
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Economic evaluation of road safety measures: what can be learned from past approaches and can they be transferred to the African context?

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Background

It is important to base road safety policies on sound knowledge. Fortunately, the volume of scientific evidence is growing and data are available more than ever before. In many parts of the world, economic evaluation methods are used to an increasing extent to study the feasibility of various sorts of policy measures and to establish priorities between investments. It raises the question whether economic evaluation to assess road safety investments should be further generalized and to what extent approaches in one setting can be transferred to other settings.

Aim

The objective of this presentation is to invite the conference audience to critically reflect on the possible application of economic evaluation of road safety measures in an African context.

Method

This presentation contains three parts: firstly, it introduces how economic evaluation, in particular cost-benefit analysis, can be done in road safety and how this was done in the European SafetyCube project. In this project, cost-benefit analyses were executed for a series of measures related to driver education, awareness raising, law enforcement, road design and vehicle technology.
Secondly, it defines opportunities and limitations of economic evaluations in road safety in general. Thirdly, it looks at whether and how these tools could also be applied in the context of African countries.

Results

The primary objective of the SafetyCube project, was to collect and to summarize existing evidence on effects of road safety measures as well as to execute an economic evaluation of these measures. This economic evaluation was principally done by means of cost-benefit analyses (CBA). These CBA aim to allow the evaluation of the effectiveness of measures in reducing crashes of different severity levels and to provide information on the socio-economic return of countermeasures. In cost-benefit analysis, the crash costs enter as benefits (because

they are prevented) and the costs for measures are compared to them. In the SafetyCube project an international (EU) average of crash costs for different injury levels has been calculated which enables to do international comparisons in a more harmonized way.

To be included in the analyses, only measures were selected for which the available evidence showed favourable effects on road safety and for which sufficient quantitative information on effects, target crashes and implementation cost could be retrieved. The economic efficiency of measures was calculated in terms of their benefit-to-cost ratio, their net present value and, in case there was no information on the costs of the measure, their break-even cost.
Despite the attempt to present the information in ways that allow a comparative assessment of the selected measures as per any key element of the CBA, one clear finding is that any comparative analysis must be addressed with much caution. One reason for this is that measures vary substantially in terms of typical units of implementation, area of application (e.g. intersections versus road segments, rural versus urban environments) and country of reference. Moreover many measures can be implemented in either lower or higher cost implementations. Furthermore one must be aware that even for measures in a similar context, the uncertainties in the safety effects and costs as found in the literature are usually high.
In order to reflect the extent of some of the inherent uncertainties, a sensitivity analysis was done that aimed to provide an indication of what can be expected in terms of cost-effectiveness of each measure in different scenarios, including a ‘best case’ and a ‘worst case’ scenario.

Conclusions

Despite of the limitations of the approach, it is concluded that economic efficiency evaluations, including proper uncertainty assessments, can contribute – also in Africa - to rational decision-making in road safety.