

INTRODUCTION

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Workshop Chairman

This Circular reports on a committee workshop intended as a critical review of data needs relating to the evaluation of the severity of ran-off-road collisions. The workshop, sponsored by the Transportation Research Board's Committee on Safety Appurtenances, took place in Pacific Grove, California, June 25-26, 1981.

Sound data on the relative hazard of an existing roadside situation and proposed treatments are required in order to use cost-effectiveness techniques to determine the relative payoff of alternatives. A rational life-cycle cost/benefit comparison of alternate safety treatments is also heavily dependent on sound data on the relative severity of collisions with the proposed treatments. The scarcity of such reliable data as viewed from the prospective of the myriad of real-world decisions that must be made has been recognized as the major stumbling block in the effective use of these decision techniques.

This workshop had its origins in internal Federal Highway Administration (FHWA) discussions involving Julie A. Cirillo, Harry W. Taylor and John G. Viner concerning ways of obtaining reliable input severity data. These methods include accident studies (with related data and research design problems), controlled full-scale crash tests (with output in terms of vehicle and roadside feature kinematics and kinetics rather than predicted occupant-injury levels for most studies) and simulation (with necessary input data based on the above studies, thereby incorporating their limitations plus the question of degree of confidence placed on interpolation or extrapolation from the validation cases). It was felt that a workshop focusing on the strengths and weaknesses of these tools would be the most valuable means of assessing current technology in this area.

The Transportation Research Board (TRB) Committee on Safety Appurtenances (A2A04) agreed to sponsor such a workshop. Meeting attendees would include invited technical experts to supplement the technical expertise of TRB Committee A2A04 members in the above areas. The Environmental Factors Section of the American Association for Automotive Medicine (AAAM) provided support and assistance for the planning and conduct of this workshop. A workshop planning committee was established consisting of Forrest M. Council, William W. Hunter, Jarvis D. Michie, Chairman, TRB Committee A2A04, and John G. Viner. King K. Mak and all of the above noted individuals participated in initial workshop planning efforts. Local arrangements were handled by Eric F. and Mrs. Dee Nordlin.

The workshop would focus on knowledge gaps rather than with parts of the system that worked rather well. In so doing, it was hoped that a more meaningful dialogue among the various disciplines represented at the workshop would take place. The goals for the workshop were (a) to engage in a meaningful interdisciplinary dialogue on the impediments to obtaining improved collision severity data and (b) to identify several key problems and suggest

solutions.

The technical discussion was divided into two major areas: (a) Physical Testing and Analysis and (b) Field Performance Studies: Evaluation and Data Issues. Each session included invited presentations and group discussions. A review of cost-benefit model algorithms preceded these sessions to set the stage for the specific workshop deliberations.

At the conclusion of these sessions, the four "most important" problem areas identified by the workshop attendees were discussed in subgroups of the attendees. Prior to the workshop, each attendee was asked to provide a statement of "The Most Important Specific Issue Relating to Severity Data." These statements were used as planning guidance for the workshop and are included in Appendix A. At the end of each session, each attendee was asked to list "The Four Most Important Problems Discussed in This Session." The workshop planners used both of these inputs to select the "four most important problems" which were the subject of Session 3, Group Consensus on Key Problems and Recommendations.

The invited presentations and comments by session moderators together with the written summaries of the group consensus statement are in the following sections of this paper.

Part 1: Roadside Appurtenances and the Need for Improved Collision Severity Data

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ISSUES

Increasing fuel costs are prompting a shift to smaller, more fuel-efficient classes of vehicles. In addition, fewer miles of travel are occurring. Coupled with inflation, these events are resulting in fewer revenues available for highway design changes and/or safety improvements. Perhaps more than ever, notions of cost effectiveness and prioritization of programs are assuming more importance. Some current issues include:

1. Are we designing and placing our roadside hardware optimally to maximize benefits and minimize costs?
2. What are the proper effectiveness levels for appurtenances (i.e., how can we quantify how well they work?) for use in cost effectiveness or budget allocation procedures?
3. And as an aside, what vehicles and what crashes will need to be designed for in the future?

Let us momentarily focus on the second question regarding effectiveness levels. We can attempt to answer the effectiveness questions by using three basic methods: (a) field testing of countermeasures (accident and proxy studies), (b) crash testing and (c) simulation. The basic problems relating to field tests are poor study design and poor data. These problems are so intrinsic to many studies that it is difficult to state where we are today in regard to evaluating much of the current hardware. Why is this the case?