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TITLE: The Prediction of Accident Liability through Biographical Data and Psychometric Tests

DATE: March 1973

AUTHOR(S): Richard M. Harano, Robin S. McBride, & Raymond C. Peck

REPORT NUMBER: 39

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FUNDING SOURCE: Federal Highway Administration

PROJECT OBJECTIVE:

To evaluate the role of human factors in traffic accidents.

SUMMARY:

A highly contrasted sample of accident-involved and accident-free drivers was evaluated in order to determine factors related to accident involvement. Collected information represented biographical and driving-related data, personality traits and attitudes, parental relationships, perceptual style, perceptual-motor coordination, and driving simulator performance. For males, the final construct sample multiple regression equation for predicting accident-group membership resulted in a multiple R of .69, which subsequently shrank to an R of .48 upon cross-validation. The concurrent prediction equation correctly classified 68.9% of the accident-free drivers and 71.2% of the accident-involved drivers, approximately 20% better than chance prediction. The variables which were significant upon cross-validation were marital status, mileage, traffic conviction record, socioeconomic factors, rating of one's driving ability in comparison to that of elderly drivers, and personality and attitudinal factors derived from a psychometric inventory called the CIDAO. None of the vast array of perceptual-motor and simulator performance measures proved significant, although there was some suggestive relationship between simulator speed variability, two psychomotor measures of field dependence, and accidents. Classification of drivers through cluster analytical procedures revealed several high- and low-accident types. The findings indicated that a combination of cluster analyses and multiple regression analyses is a more powerful method than either alone, and that conventional multiple regression procedures can obscure complex relationships. The results for females closely paralleled the findings for males.

IMPLEMENTATION STATUS OF FINDINGS AND RECOMMENDATIONS:

The findings were not considered to be sufficiently positive for the test battery and simulator to be incorporated into departmental programs.

SUPPLEMENTARY INFORMATION:

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