

TITLE: Driving Simulator Review

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PROJECT OBJECTIVE:

To review and evaluate the technology, costs, and unresolved issues of contention related to driving simulators; to reach conclusions, based on research studies, about the validity of using driving simulators.

SUMMARY:

This paper points out that mechanical and electronic tests that place individuals in simulated driving environments have been used for almost 80 years to evaluate driver skill and competency, although little research has been done comparing performance in driving simulators to performance on the road.

The review describes two basic categories of simulators, interactive (driver has control of vehicle speed and / or direction) and noninteractive (driver has no control of vehicle). It notes that all driving simulators must offer a reasonably accurate visual presentation, have very fast (at least 30 Hz) updating of visual scenes, and have been validated. Noninteractive simulators are described as being typically used for driver training classes, being film- or video-based, and having computerized data-gathering ability, with a cost of about \$40,000 for a system with a control console, five cars and 13 different films. The discussion of interactive simulators notes that they are computer-based and involve closed-loop, real-time interaction between driver and driving scene. Interactive simulators vary widely in visual fidelity, motion of the platform, audio input, and other characteristics, and their costs range from \$10,000 (low fidelity, practical testing) to \$30 million (very high fidelity, experimental studies).

The paper stresses that driver competencies must be operationalized into measurable performance criteria whose assessment should determine the characteristics of driving simulators. It calls for more research on the predictive validity of driving simulators, both in general and in accordance with varying levels of fidelity and complexity. It is concluded that driving simulators can be useful in several ways to a licensing agency. They can be used to perform initial screening and determine who needs further road testing. Simulators can also be used to assess those driver competencies that cannot be readily assessed on a drive test, such as abilities related to night driving, emergency situations, and complex highway traffic situations.

IMPLEMENTATION STATUS OF FINDINGS AND RECOMMENDATIONS:

The department has acquired an interactive driving simulator and is currently conducting a feasibility study.

SUPPLEMENTARY INFORMATION:

None.