



Florida Department of Transportation Research

A Qualitative Analysis of Bus Simulator Training on Transit Incidents – A Case Study in Florida

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The simulator was once a very expensive, large-scale mechanical device for training military pilots or astronauts. Modern computers, linking sophisticated software and large-screen displays, have yielded simulators for the desktop or configured as small suites or work stations. Such simulators are becoming more common in the training of new public transit operators.

Practicing skills and experiencing mistakes on a simulator offer transit operators a safe way to test new skills and reinforce existing ones. Transit agencies regard simulators as an innovative, interactive method of training that enables them to provide theory-based approaches to the challenges of operating a bus through strategic demonstration and practice-based methods instruction. Much qualitative information supports the value of simulator training, but quantifying the effect of this training has been elusive.

In this project, University of South Florida researchers tracked three Florida public transit agencies as they integrated computer-based transit bus simulators into existing training. In an effort to quantify simulator impact on driver performance, the researchers sought to correlate operators' simulator experience with empirical incident and training data, including driver performance, safety, and incidents.

The researchers also interviewed transit agencies outside Florida about their experiences with bus simulators in operator training. They asked these agencies for data tracking the performance of the simulator-trained operators as a basis for discussion of safety outcomes. The agencies provided valuable insight into simulator use, offering important perspectives on lessons learned and best and model practices.

The researchers found unwavering confidence in simulator training among transit agencies. In addition to aiding operators in developing competencies in a realistic environment,



A transit operator trains in a simulation station under the guidance of an instructor.

simulators also permitted trainers and safety staff to assess operator performance. Assessment sessions provided a forum for honest discussion between trainers and operators, which promoted learning.

The researchers were able to quantify some aspects of simulator effectiveness, but other areas proved instructive by revealing barriers to acquiring needed data. Barriers resulted generally from the operating conditions that most agencies face; funding, for example, affects data collection and employee turnover. Administrative issues included changing route structures and organizational changes. Training issues included training standards and consistency, as well as training staff resolve and commitment to simulator use.

Quantitative measures are the key link in guiding the design and use of simulator systems according to their real effect on driver performance. This research provides valuable insights into the various aspects of public transit operations and training, indicating directions for creation of more effective and verifiable public transit training programs.