

# Transfer of fuel-efficient driving technique from the simulator to the road: steps towards a cost-benefit model for synthetic training

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## Abstract

TRUCKSIM is a programme of research focused on simulation as a training delivery tool for skills development in qualified truck drivers. This paper reports on results from a longitudinal cohort study that sought to provide an analysis of the benefits of synthetic training in the area of fuel efficiency improvement. 36 drivers attended the truck simulator on three separate occasions and received training designed to improve driving style in a range of traffic situations. Apparent fuel consumption figures were recorded during each simulator visit, and compared to real world fuel consumption records for the same drivers. In addition, fuel consumption data were obtained for a matched cohort of drivers over the same period who did not attend the training. The method for the study is detailed, and the framework for converting vehicle performance data into usable training feedback for the driver explained. The mean change in fuel efficiency observed of drivers in the simulator group was an improvement of 15.7 % in their on-road performance. The implications for the development of cost benefit models for synthetic training are discussed.

## Introduction

In 1991, the editorial of a special issue of Heavy Duty Trucking claimed “*Cost-effective training simulators are becoming technologically possible - there have been astounding leaps in computer graphics and realism - at the same time the driver shortage and the Commercial Driver License (CDL) are forcing the trucking industry to seek more effective methods for driver training, selection and screening*”. Some might view it as surprising that, given the size of the trucking industry in the US and Europe, there are relatively few commercial truck simulators in existence in 2005, and little consensus on the content of any curriculum delivery.

There appear to be three fundamental reasons for the relatively slow adoption of simulation as a key component of professional truck driver training:

- A lack of documented evidence showing a clear benefit of simulation training over traditional on-road and test track methods

In D. de Waard, K.A. Brookhuis, and A. Toffetti (Eds.) (2006), *Developments in Human Factors in Transportation, Design, and Evaluation* (pp. 163 - 176). Maastricht, the Netherlands: Shaker Publishing.