A Drivers' Performance Assessment Model Based on Fuel Economy Measurements

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Abstract

Currently, it is a common practice within transport companies to reduce fuel consumption of their fleet by awarding best drivers with public symbolic recognitions, as part of their programs to promote efficient driving. Usually fuel economy (FE) is the key performance indicator used to evaluate them. However, FE depends on several other parameters such as the working route, vehicle weight and vehicle technology. Therefore, companies with a diverse fleet composition require a fair KPI to select their best drivers.

In this work, we present a model to assess drivers' performance based on FE measurements. Based on multivariate statistical analysis of one-year FE data of an urban and interurban bus transit company, we found that drivers' FE exhibit a normal distribution when they are grouped within three categories: (a) the route, representing the driving cycle; (b) the vehicle age, representing the engine technology, and (c) the number of axles, representing the weight of the vehicle. Thus, the standard statistical analysis to identify outliers was used to identify best drivers and vehicles that require maintenance.

Keywords (12 font)
Fuel economy, drivers' performance, transportation performance, urban fleets

Biographies

Jenny Díaz Ramírez is currently a professor of the Department of Engineering at the University of Monterrey. She has worked previously as professor at Tecnológico de Monterrey, Mexico and Pontificia Universidad Javeriana Cali, Colombia. She is industrial engineering from Universidad del Valle, Colombia. She holds an MSc in industrial engineering from Universidad de los Andes, Bogota, Colombia, an MSc in operations research from Georgia Tech, US and the PhD in Industrial Engineering from Tecnológico de Monterrey. She is a member of the National System of Researchers of CONACYT, SNI Level I, since 2015 and recognized as an associated researcher by Colciencias, since 2016. She is the author and co-author of scientific articles on topics such as applied optimization and statistics in health systems, air quality, energy efficiency in transport and logistics.

José Ignacio Huertas is mechanical engineering from Los Andes University, Bogota, Colombia. He holds a M.Sc, and a Sc.D. in Mechanical Engineering at Washington University, MO, USA. Currently, he is a researcher professor

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