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## Mode choice behavior of high school goers: Evaluating logistic regression and MLP neural networks

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### Abstract

There is a quite a handful of scientific evidence where logistic regression and multilayer perceptron neural networks (MLPs) are compared to explain mode choice behavior. Student populations, however, are understudied. Further, a model that better explains the mode choice behavior of 'high school' goers has not been scientifically investigated. On this backdrop, this paper endeavored to make a comparison between the efficiency and robustness of the logistic regression model and MLPs to predict and explain the mode choice behavior of high school students in Khobar city. Among the pertinent variables considered, the logistic regression model finds that (i) monthly family income, (ii) travel time to school, and (iii) parents' education level are statistically significant to determine the mode choice to the school. Based on the most significant variables and a comparative analysis conducted between logistic regression and MLP, the latter has better strength in predicting and explaining mode choice behavior of public high school goers. This led to a reflection on the implications for transport policies.

Keywords: *logistic regression; neural network; mode choice; high school students*

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