

Vehicle characteristics and emission A Logit analysis of emission test results in Mashhad, Iran

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Abstract

One of the methods that have been used in order to mitigate the air pollution problem is the IM program in order to identify the high polluting vehicle and make them to adjust their engine in accordance to the emission standards. In Iran due to the air pollution problems the government operates a rudimentary IM program based on the idle engine test utilizing an exhaust gas analyzer which should be done annually. The test results which contains the vehicle characteristics such as weight, model year and vehicle type are gathered on the test center. While IM programs usually regarded as a useful tool for soothing the air pollution, one of the criticisms about the program is that it is required for the entire fleet and it reduces the cost effectiveness of the program. This paper seeks for a basis for selective sampling that is more likely to fail the emission test.

This research studies the relationship between the vehicular characteristics and emission. Nearly 49000 data gathered from the IM center in Mashhad. Each data set contains information about the CO and HC emission and vehicle age, weight, type and ownership. This data used in order to estimate Logit models of test failures and regression models of emissions.

The results indicates that vehicle age, type and ownership play a significant role both in probability of emission test failure and amount of predicted vehicular emission.

Key words: emission modeling, Logit models, vehicular characteristics