

Assessment of road user charges in Saudi Arabia

Hashem Mohammad Noor Al-Madani

Civil Engineering

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Abstract

This investigation is to develop a fair charging model for annual taxation and for overload violation. The study is limited to the Eastern Province of Kingdom of Saudi Arabia, and can be extended throughout the Kingdom.

It is suggested that road users should pay the tax in proportion to their share of maintenance cost. The vehicle charge is proposed to be a function of our parameters : rate of damage cause by the vehicle to the pavement structure, utilization of the roads network, degree of occupancy of the road carriageway, and maintenance cost. The rate of damage of a vehicle is based on rutting failure criteria and is presented by a relative damage factor considering a passenger car as the standard vehicle. The utilization of a vehicle is presented by the annual distance travelled relative to that of passenger car. The degree of occupancy is presented by the size of the vehicle with respect to the standard passenger car. Two models were developed : First is an annual legal road user charge (LRUC) model. In this model the total annual maintenance cost is distributed among vehicles in relation to their relative damage, utilization and occupancy. An equation was developed to determine the annual tax of a vehicle based on its legal load limits. Second is the load violation charge (LVC) model. An equation was established to analyse the collected data toward the calculation of the road user charges. Annual taxation tables were developed for all categories of vehicles. A table for violation charge for each type of vehicles were developed. These tables are based on estimated value of annual major and routine maintenance cost in the Eastern Province.