

# **A Two-Stage Hedonic Price Model for Light-Duty Vehicles: Consumers' Valuation of Automotive Fuel Economy**

*Qin Fan, School of Economics, University of Maine, Orono  
Jonathan Rubin, Margaret Chase Smith Policy Center, University of Maine, Orono*

## **Overview**

This poster presents consumers' valuation of automotive fuel economy and the impact of demographic factors on consumers' choice while purchasing vehicles in State of Maine. The desirable level of current and proposed CAFE standards as well as the necessity of tightening CAFE standards is also analyzed based on the measurement of consumers' net benefits from increasing fuel economy to a higher level using a non-market valuation approach.

## **Method**

This study uses a two-stage hedonic price model to explore the impact of fuel economy on vehicle price. Fuel economy is an important economic and social-psychological benefit of certain automobile choices. It is well known that the price of a vehicle may reflect a buyer's willingness to pay more for this attribute. The nature of this relationship may be examined by applying the hedonic price technique, an econometric method which investigates vehicle prices and the variation across demographic characteristics of the buyer.

## **Results**

Results show that in State of Maine, car consumers are willing to pay \$208, while truck buyers are willing to pay \$233 for a marginal increase of fuel economy. Furthermore, results indicate that consumers undervalue benefits from fuel economy improvement in the life cycle of an automobile, but fully internalize fuel savings and social benefits for the first 3-5 years of new vehicles' ownership. Education and age are found to be positively associated with fuel economy, and income is not significantly correlated with fuel economy. Domestic car buyers have lower fuel economy demand compared to foreign car buyers, while the reserve holds true for truck consumers. Based on the shape of demand curves of fuel economy and the measurement of consumers' welfare, the proposed higher CAFE standards that are 35 miles per gallon for the total fleet of passenger cars and light-duty trucks manufactured for sale in 2020 are reasonable.

## **Implications**

This study sheds a light on the cost-effectiveness of tighter CAFE standards that promote higher fuel efficiency, and provides important information for policy makers both in the environmental and transportation arena.