

Abstract #: 299

Author Name: Ken Kurani

Author Company: University of California, Davis

Second Author's Name: Angela Sanguinetti, University of California, Davis

Abstract Title: "Actual Results Will Vary": A Behavioral Foundation for Eco-driving Research

Abstract Text:

Fuel economy measures posted on new vehicles sold in the US state, "Actual results will vary for many reasons, including...how you drive and maintain your vehicle." Eco-driving seeks to take advantage of this variability to improve on-road fuel economy. However, reported effects of eco-driving interventions vary widely: -7% to +24% in the literature we reviewed. This variation is partly attributed to disparate definitions of eco-driving: we found no comprehensive consensus definition of eco-driving behaviors. Thus, the literature has produced inconsistent—or at least decontextualized—advice to drivers, e.g., whether to accelerate "gently," "moderately," or "quickly." The range of estimated effects is also due to variation in intervention designs. For example, in-vehicle feedback, the predominant intervention, varies in terms of what information is provided and how it is provided, both with implications for motivating, learning, and sustaining eco-driving behaviors. To address these issues, we investigated eco-driving from a systematic behavioral perspective to provide a foundation for a more precise understanding of the behaviors that constitute eco-driving, its effects, and intervention design. We begin by assimilating definitions of eco-driving into a comprehensive inventory of operationalized behaviors and meaningful categories. We present a typology of eco-driving feedback based on an extensive behavioral analysis of a large sample of commercial in-vehicle feedback displays and discuss implications for the effectiveness of each type of feedback in supporting eco-driving. The goal is to organize eco-driving research into a comprehensible whole capable of more clearly supporting personal and policy goals related to automotive energy use and emissions.