

Using Geographic Information Systems to Determine Street, Road, and Highway Functional Classification Accuracy

Abstract

Federal Highway Administration (FHWA) functional classification of streets, roads, and highways reaches into many processes of highway planning, design, and management. The classification system has not been updated in forty years. Many issues with its definition and use, such as propagated error, bias, and ambiguity are discussed as well as the ramifications on the Highway Performance Monitoring System (HPMS). Travel demand modeling relates to functional class in that the data used and derived from models are the same as the data used to define functional classification. Trip length, trip purpose, traffic volume, and vehicle miles traveled (VMT) all have bearing on functional class. Design criteria are tied closely to functional classification, as is funding eligibility. The functional classification system is in need of redevelopment, as shown by the results of this comparison of observed and prescribed criteria. GIS and travel demand model data was used to examine average daily VMT and minimum horizontal curve radius values for segments in the Kansas City metropolitan area. Statistical Chi Square tests were used to attempt to show a significant difference exists between measured, observed values and prescribed, expected values, and potential sources of error are discussed. Samples from the Kansas City urbanized area show that a significant difference exists for

average daily VMT, which supports a call for better definition and procedures regarding the FHWA functional classification system. Better definition and procedures will result in better decision making for the ailing U.S. transportation infrastructure.