Exploring the Capabilities of Esri Roads and Highways to Build a Master Road Network

Abstract

Master road networks are essential for accurate travel demand models, which play a pivotal role in traffic forecasting and infrastructure planning. This study explores the capabilities of Esri Roads and Highways to build master road networks by managing linear referencing systems (LRS), streamlining data conflation, and enabling efficient visualization. The research involves creating an enterprise geodatabase, configuring LRS schemas, and designing workflows to unify diverse datasets into a cohesive and reliable master network. These efforts aim to evaluate Esri Roads and Highways as a tool for constructing master road networks that support travel demand forecasting and transportation planning. Using Tennessee as a case study, this research demonstrates how Esri Roads and Highways can integrate traffic count data, roadway attributes, and future project updates from multiple systems with differing structures. Specifically, data from TN TIMES, the Road Inventory Office, and the PPRM system are used to address challenges related to inconsistent attributes across these datasets. The workflows and insights developed in this study aim to establish a cohesive master road network for statewide travel demand modeling and transportation planning.