

This study examines whether high-speed rail (HSR) has a causal effect on reducing road traffic. Motorization has been progressing worldwide. Examining whether HSR, which involves large-scale investment, contributes to reducing road traffic is important, particularly in countries facing aging populations and population decline. This study uses data from the Inter-Regional Travel Survey in Japan, conducted every five years, which captures travel patterns by mode and trip purpose (2005, 2010, 2015 data). This study employs a gravity model and a difference-in-differences approach at the city level and OD unit level. It further uses interaction terms and subgroup estimation to quantify how the treatment effect varies by distance and trip purpose. HSR significantly reduces parallel road traffic on average. This reduction is not observed for business purposes; non-business purpose travel drives the effect. These results suggest HSR's potential to contribute to congestion relief and environmental load reduction, highlighting the significance of reevaluating its social benefits even in a population decline phase.