

## **Public Abstract**

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Title: Spatial Econometric Analysis of Highway and Regional Economy in Missouri

The dissertation consists of four chapters: first, highway and economic development; second, spatial effects of highways and employment in Missouri; third, highway and industrial establishment in Missouri; finally, simultaneous spatial model of highway-employment for economic growth in Missouri.

Spatial econometric methods are used in order to investigate the relationship between highways and regional economy. OLS models were run at first and spatial lag models or spatial error models were estimated and contrasted with a simpler model without considering spatial statistics relationships.

The first chapter is to determine if there is a relationship between highway development and the spatial pattern of employment growth in Missouri. The results show that the reduced transportation cost due to highway improvements provides efficient production and distribution, and has good effects on economies of scale, specialization and cost reduction.

As for the second chapter, interstate highways in Missouri don't have positive effects on employment growth. The variable of mileage of road with four lanes has significantly negative sign but two lanes show insignificantly negative sign. Spatial autoregressive coefficient ( $\rho$ ) is significantly positive.

The third chapter is to investigate the effects of highway infrastructure on the economic performance of Missouri counties. It is to figure out if there is a relationship between highways and the industrial establishment in Missouri, and to explain how highways affect the spatial distribution of firm establishments. The spatially autoregressive coefficients (LAMBDA) show all significantly positive. Highway investments have insignificant negative effects on firm establishments in all models. Highway investments of neighboring counties are significant negative. This result doesn't provide evidence that highways have positive effects on regional economy related to firm establishments in Missouri.

The fourth chapter is to analyze the interdependency between highway and industrial sectors, manufacturing and retail trade in Missouri through a simultaneous highway-employment spatial econometric model. The coefficient on the highway variable of population is statistically significant positive and others are insignificant. Spatial lag coefficients on population and wage are significantly positive. The employment of retail trade depends on the population in the neighboring counties, and the county population relies on the employment of retail trade and manufacturing positively in the neighboring counties.