The correlational and causal investigation into the land use-transportation relationships: evidence from the Dallas-Fort Worth metropolitan area

Abstract
The role of land-use and related policies in reducing automobile dependence has been the subject of heated policy debate for over two decades. Previous research has shed light on the correlations between land-use and travel. Yet a crucial knowledge gap still exists in establishing causality between the two. Do changes in land-use characteristics cause behavioral changes in individuals’ decisions on what transportation means to use for travel? How does land-use as a contextual factor shape the decision process and outcome of trip frequency and travel mode choice? These questions remain largely unanswered. Attempting to fill the gap, this study applied the directed acyclic graphs method to identify the causal relationship between land-use and travel in the 9-county Dallas-Fort Worth (D-FW) metropolitan area. The logit captivity (LC) model, an extension to the conventional multinomial logit, was utilized to capture the contribution of land-use in affecting individuals’ decisions on travel mode choice. All the data for this study were obtained from the North Central Texas Council of Governments (NCTCOG). Evidence from the D-FW region confirms to a certain extent the causal effects of land-use on travel. For work trips, increases in regional accessibility, job density and share of commercial land-use reduce the use of automobiles. Higher regional accessibility, however, causes households to generate automobile trips and thus leads to the increase in vehicle miles of travel (VMT). For non-work trips, population density, job density and regional accessibility are direct causes of the choice of automobile, while only regional accessibility is causally connected to reducing automobile trips and VMT. The logit captivity model results indicate that land-use contributes to captive-driving choices for home-based work trips. Lack of land-use mix at trip origins increases the probabilities of trip-makers being captive to the automobile from 0.06% to 5.62% for driving-alone and from 0.38% to 3.55% for shared-ride.

URI
http://hdl.handle.net/1969.1/4299

Subject
tavel behavior
causality

Collections
Electronic Theses, Dissertations, and Records of Study (2002– )

Citation
Learning individual-level causal effects from observational data, such as inferring the most effective medication for a specific patient, is a problem of growing importance for policymakers. The most important aspect of inferring causal effects from observational data is the handling of confounders, factors that affect both an intervention and its outcome. A carefully designed observational study attempts to measure all important confounders. However, even if one does not have direct access to all confounders, there may exist noisy and uncertain measurement of proxies for confounders. We build Dallas-Fort Worth’s extensively developed rail transit system in the last twenty years has been touted as an important solution to many urban issues, and a surge in development has been evident in many station areas (Chatman et al. However, different land use requirements by industry sector, or agglomeration diseconomies, such as congestion or high costs, may counteract agglomeration benefits. This might result in the dispersion of economic activities away from denser areas and diminished economic returns (Fujita et al. 2001; Graham 2007b). Four counties in the Dallas-Fort Worth metropolitan area were selected for the study including Collin county, Tarrant County, Denton county, and Dallas county. Fig. Using the URL or DOI link below will ensure access to this page indefinitely. Copy URL. Copy URL. Property Rights for the Poor: Effects of Land Titling. 54 Pages Posted: 1 Feb 2010. See all articles by Ernesto Schargrodsky. Secure property rights are considered a key determinant of economic development. The evaluation of the causal effects of property rights, however, is a difficult task as their allocation is typically endogenous. To overcome this identification problem, we exploit a natural experiment in the allocation of land titles. In 1981, squatters occupied a piece of land in a poor suburban area of Buenos Aires. In 1984, a law was passed expropriating the former owners’ land to entitle the occupants. The Land Use – Transport System. The relationships between transportation and land use are rich in theoretical representations that have significantly contributed to regional sciences. They can be investigated empirically through the observation and analysis of real-world changes in the urban spatial structure. Sector and multiple nuclei land use models were developed to take into account numerous factors overlooked by concentric models, namely the influence of transport corridors (Hoyt, 1939) and multiple nuclei (Harris and Ullman, 1945) on land use and growth. Both representations consider the emerging impacts of motorization on the urban spatial structure, particularly through the beginning of suburbanization and the setting of polycentric cities. Evidence: This course will explore the rules of evidence and their rationale, including relevancy, hearsay, impeachment, cross-examination, opinions and experts, documents, and privileges. Criminal Procedure: This course will cover regulation of law enforcement conduct during the investigation of crimes, with special emphasis on constitutional and statutory limitations. Topics include search and seizure, confessions and incriminating statements, electronic surveillance, entrapment, identification procedures, and remedies for improper police conduct. Look at these sentences from the dialogue (1-9) and match them with the rules regarding the use of comparative and superlative forms (a-h). Some examples may match with more than one rule.