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Project Title: Impacts of e-Commerce on Warehousing and Distribution in California

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DRISI provides solutions and knowledge that improves California's transportation system.

Impacts of e-Commerce on Warehousing and Distribution in California

Evaluating how e-commerce has impacted warehousing location decisions in California.

WHAT WAS THE NEED?

E-commerce is increasing around the world. The emergence of online shopping has transformed where and how goods are produced, distributed, and sold, and how consumers make shopping as well as shopping travel decisions. restructuring supply chains and changing patterns of warehousing and distribution (WD) location, which in turn affect goods movement on the highway system. The supply chain has responded with more complex distribution networks: large facilities in less urbanized areas serving as hubs for in-city distribution. It is therefore timely to examine how e-commerce may be to examine how these two forces may be restructuring supply chains and changing patterns of WD location, which in turn affect goods movement on the transportation system.

WHAT WAS OUR GOAL?

The purpose of this research was to document and analyze trends in location patterns of WD activity in California over the past decade, and to explore the relationship between these trends and the growth of e-commerce. This research builds on a previous study of WD trends in California 2003-2013 and extends this period of analysis to 2021.

WHAT DID WE DO?

This research examines WD trends in California from 2014 through 2021, the latest year of data at the time of project start. Trends are examined at several geographic levels: state, region, metro area, county, and zip code. The research performed was broken down into the following steps: 1) description of spatial trends in WD location patterns, 2) understanding of how spatial trends are linked to e-commerce and related changes in supply chains, 3) implications for

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state and local planning. Results provide a greater understanding of the ways that e-commerce related changes in the supply chain are affecting California and how these changes can be best managed to achieve sustainability and equity goals.

WHAT WAS THE OUTCOME?

The research leads to the following general conclusions. First, the spatial organization of warehousing is remarkably stable: the industry sector more than doubled over the time period and the additional activity simply intensified the existing pattern.

Second, the results are not fully consistent with industrial location theory. Employment density, the research team's metric for evaluating land price and land scarcity is consistently significant, as is their measure of labor force access. The research team's measure for linked industries is generally not significant once spatial lags are introduced. Third, the project's time series models suggest that there may be differences in the spatial dynamics of warehouse location before and during/after the COVID pandemic.

WHAT IS THE BENEFIT?

The primary benefit of this research is an increased understanding of how the various warehousing and distribution facilities across California have been located over the past decade in order for companies to increase and adjust their capacity for the vast increase in ecommerce and delivery demand. Results of the research provides a better understanding of freight dynamics and what they imply for state freight planning and management. Warehousing and distribution facilities are major freight generators. Understanding these trends supports truck parking plans, highway improvements, placement of public truck charging facilities, and much more. As the California Department of Transportation (Caltrans) continues to plan toward a more sustainable freight future it is imperative that we understand recent historical distribution to better forecast our planning out toward the future.

LEARN MORE

https://metrans.org/research/impacts-of-ecommerce-on-warehousing-and-distribution-incalifornia

IMAGES



Image 1: Warehouses in Los Angeles, California (Los Angeles Business Journal, 2022)

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