

Suburban Productivity Shocks and Restrictive Zoning – The Case of Amazon Fulfillment Centers

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What distortions are created by zoning laws when cities face productivity shocks outside of downtown?

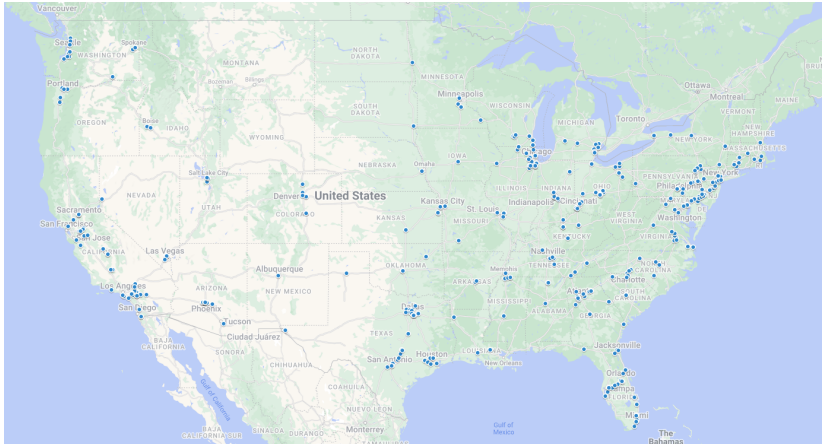
1. Zoning is pervasive in US metropolitan areas and is slow to be updated
 - Separates residential areas from harmful polluting industry
 - ⇒ Focus of this research
 - Provides certainty over future homevalues and local (endogenous) amenities
 - ⇒ Focus of the literature – has important implications for the elasticity of housing supply
 2. Within a metropolitan area, employment is not concentrated in one Central Business District (CBD).
 - Traditional urban models assume a single CBD (AMM)
 - This phenomenon has shifted over time
- ⇒ Historical zoning laws may not be appropriate for today's cities.

The Case of Amazon Fulfillment Centers

1. What affect do Amazon warehouses have on housing prices, wages, and local (environmental) amenities?
 - Amazon employs over 1 million people in the US
 - In many communities, Amazon warehouses are the sole, or main, employer in the industry
 - Warehousing construction has increased 1,400% since 2010 and now makes up over one third of all commercial construction¹
2. How does industrial zoning influence these outcomes?
 - The Amazon warehouse network is rapidly expanding, and creeping into suburbs – areas not typically zoned for industrial activity

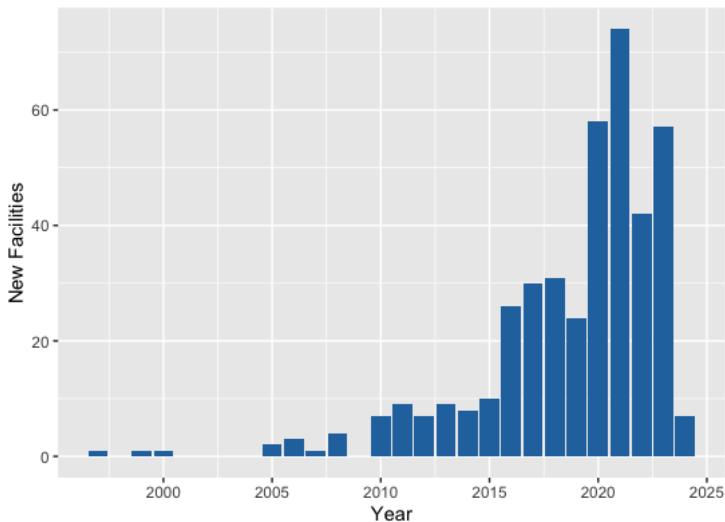
¹Dodge Data & Analytics

Distribution of Amazon Fulfillment Centers



Data source: MWPVL International Inc.

New Amazon Fulfillment Centers



Data source: MWPVL International Inc.

Potential Sources of Exogeneity

Location:

- 2018 South Dakota vs. Wayfair ruling
 - ⇒ Firms no longer need a physical presence for states to force sales tax remittance
- E-Commerce demand shocks related to the COVID-19 Pandemic
 - ⇒ New openings in 2020; closures and delays in 2022/23

Within-city location:

- Historical zoning laws

Other:

- Increasing wages nation-wide to \$15 per hour in 2018

Literature

E-Commerce

- Relihan (2022) studies the effect on consumption patterns at brick-and-mortar retail
- Couture et al. (2021) and Dolfen et al. (2023) measure the gains to consumers
- Fox et al. (2022) and Agrawal and Shybalkina (2023) study the impact on local taxes

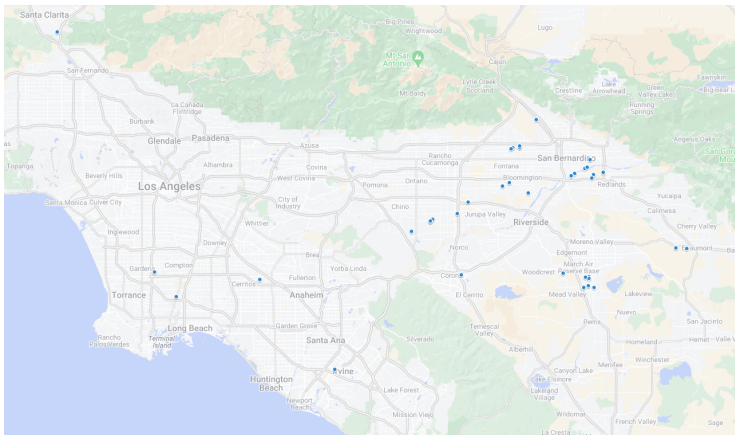
Land Use Restrictions

- Residential: Hsieh and Moretti (2019), Glaeser and Gyourko (2018), Gyourko et al. (2008), Song (2021)
- Industrial: Stull (1974), McMillen and McDonald (1999), ...

Local Labor Markets

- Greenstone and Moretti (2003), Monte et al. (2018), Derenoncourt et al. (2022)

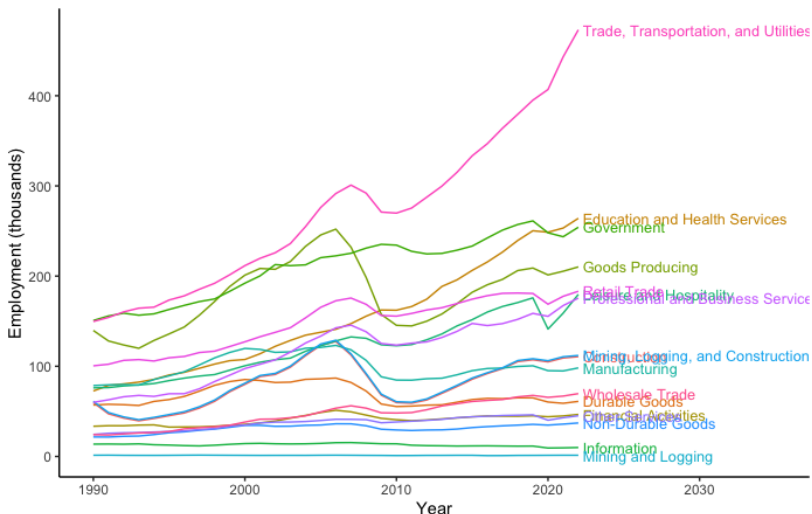
Greater Los Angeles as an Example



Data source: MWPVL International Inc.

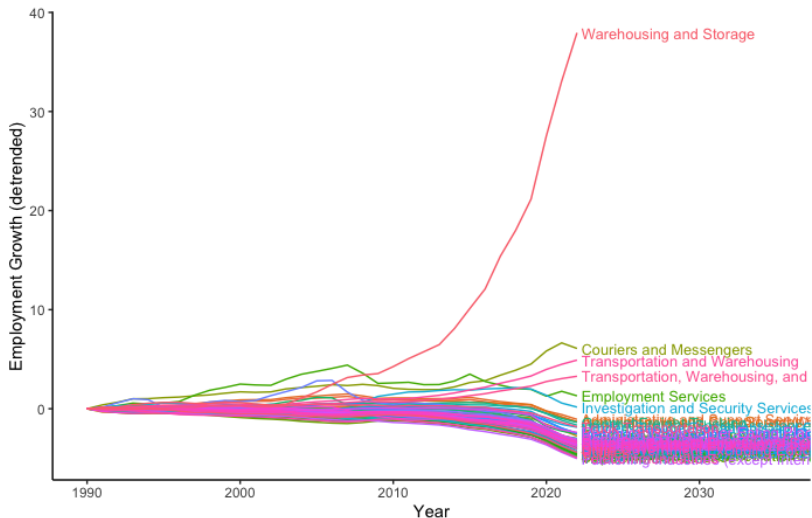
In 2012, Amazon opened its first fulfillment center in the Inland Empire (IE). It has since opened 30 more facilities here.

Trade and Transport Employment Now Dominates



Data source: BLS Metropolitan Area Employment statistics for the Riverside-San Bernardino-Ontario MSA, by supersector

Driven by Warehouse Employment Growth



Data source: BLS Metropolitan Area Employment statistics for the Riverside-San Bernardino-Ontario MSA, by industry and supersector

But Potentially Brings a New Source of Pollution

How Giant Amazon Warehouses Are Choking a California Town

Ontario was once at the center of the dairy industry. Now it's home to Amazon's largest warehouse and hundreds of others—with dangerous consequences.

By Maanvi Singh

Photographs by Pablo Unzueta

Published September 13, 2022 | Updated December 13, 2022



Edgar Jaime walks along his farm as a new Amazon warehouse looms in the distance.

Photo: Pablo Unzueta/The Guardian

CAL MATTERS

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California warehouse boom comes with health, environmental costs for Inland Empire residents



BY JIM NEWTON

JANUARY 26, 2023



Large warehouses including an Amazon fulfillment center in San Bernardino on Jan 26, 2022. Photo by Jay Calderon/The Desert Sun

Next Steps

1. Use wage data to motivate that this is really a productivity shock, not just a shift in employment sectors
2. Explore housing market trends
3. Gather industrial zoning information for relevant municipalities
4. Read more into the literature on commercial/industrial land use restrictions