The Politics of Warehousing in the Inland Empire, CA: How did we get here?

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Abstract

The Inland Empire (IE) is made up of the San Bernardino and Riverside counties, just east of Los Angeles in Southern California. The IE has experienced rapid economic and industrial growth as a result of the increased demand of e-commerce and fast delivery, which has led to decreased air quality, loss of green space, and health impacts to the region. At the local and state level, this region and its people have been treated as disposable and as the "land of cheap dirt."[1] Warehouse development and placement has proven to be an environmental injustice issue, with over 300,000 individuals living within ¼ mile of a warehouse, roughly 60% of which are Hispanic/Latino.[2] San Bernardino and Riverside counties are also the top two counties in the United States with high concentrations of ozone, where over a third of their year is met with dangerous levels of ozone.[3]

Decisions on where warehouses can be placed and the approval of them is decided at the local level. Through ambiguous and harmful zoning practices, the Inland Empire has become an industrial center with warehouses placed in close proximity to schools, homes, parks, etc. Based on research conducted by Radical Research and Pitzer College, the 5 cities/regions with the highest concentrations of warehouses are Ontario, Fontana, Rialto, Chino, and the March Joint Powers Authority. My research delves into the behavior taking place at the local level, answering: How have local elected officials in the IE facilitated the growth of industrial warehouses? Do local governments in the IE prioritize warehousing developments over rent control, jobs and the economy, and reducing crime? I find that IE cities discuss warehouses at a higher rate when compared to other issues, and contextually, when discussing warehousing, I find a greater focus on approval and development of new spaces which is not as present in the other issues.

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[1]Archives, L. A. Times. "By Comparison, Land in the Inland Empire Is Dirt Cheap." *Los Angeles Times*, 13 Aug. 1985, www.latimes.com/archives/la-xpm-1985-08-13-mn-1379-story.html.
[2]Munoz, Amparo. Philips, Susan. Ruiz Mary Ann. "A Region in Crisis." *Robert Redford Conservancy for Southern California Sustainability.* January 2023. https://calmatters.org/wp-content/uploads/2022/06/State-of-Emergency-Public-Health-Request.pdf.
[3]"Most Polluted Places to Live | State of the Air." *American Lung Association 2024*. www.lung.org/research/sota/key-findings/most-polluted-places.

Chapter 1: Introduction

1.1 Introduction

The Inland Empire (IE) is a growing metropolitan region located in Southern California, comprised of the San Bernardino and Riverside counties (Figure 1). What was once deemed the Orange Empire, due to the region's acres of navel and Valencia orange trees, has been converted into a booming industrial region.[4] The IE has experienced rapid population, economic, and industrial growth since the late 20th century, and is the 12th[5] largest metropolitan region in the country. This rapidly growing region is home to over 4.6 million Californians, with an overwhelming majority (71%) being people of color, the majority (53.7%) who identify as Hispanic or Latino.[6]

Additionally, due to the close proximity of the Port of Los Angeles, the largest port in North America, the IE has become a warehouse epicenter to meet the growing production demands. In 1980, the IE had a little over 200 warehouses; today there are over 4,000 warehouses accounting for over 1 billion square feet of land according to an analysis conducted by Pitzer College.[7] As the demand for quick shipping and production has increased, the number of warehouses ensued, with plans across the region to expand industrial centers in the coming years. With this industrial boom, poor air quality, loss of green space, and adverse health impacts to the region have emerged. According to the American Lung Association[8] San Bernardino and Riverside counties rank as having the highest concentrations of ozone in the entire country, with the number of unhealthy air quality days increasing annually.

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[4] Masters, Nathan. "When Oranges Ruled the Inland Empire." *KCET*. 21 June 2022. https://www.kcet.org/shows/lost-la/when-oranges-ruled-the-inland-empire.
[5] Korhonen, Veera. "U.S. population of metropolitan areas in 2023." *Statistica*. 26 July 2024. https://www.statista.com/statistics/183600/population-of-metropolitan-areas-in-the-us/.
[6] U.S. Census Bureau. 2023. https://data.census.gov/table/ACSDT1Y2023.B01001I?q=race&t=Race%20and%20Ethnicity&g=050XX00US06065,06071&y=2023.
[7] College, Pitzer. "Mapping and Environmental Data Visualization." *Robert Redford Conservancy for Southern California Sustainability*. 29 December 2022. https://www.pitzer.edu/redfordconservancy/mapping-data-visualization/.
[8] American Lung Association State of the Air. Most Polluted Places to Live. 2024. https://www.lung.org/research/sota/key-findings/most-polluted-places.

Figure 1: Inland Empire, CA Map

A 2024 survey found that 53.1% of IE respondents lived close to a warehouse distribution center, and 77% lived next to a highway. Black (61.8%) and Latino (58.3%) respondents were found to be statistically more likely to live next to a warehouse center compared to white (50.1%) and Asian (44.5%) respondents. When asked if they would be “willing to accept new warehouses/logistic centers and job creation even if it may lead to worse health outcomes for [them] and [their] family", 71.9% of respondents disagreed with this statement with only 13.2% agreeing. Black (62.8%) and Latino (57.2%)

respondents were statistically more likely than white and Asian respondents to strongly disagree with this statement.[9]

Given that those most impacted by the growing warehouse industry are unwilling to accept the potential positive tradeoffs of warehousing for their health and well-being, it raises the following questions: How have local elected officials in the IE facilitated the growth of industrial warehouses? Do local governments in the IE prioritize warehousing developments over rent control, jobs and the economy, and reducing crime? To address these questions, I test two hypotheses:

H1: The amount of discussions dedicated to the approval of new warehouses in city council meetings are far greater than the amount of discussions focused on the approval of new housing, creating jobs and improving the economy, and strengthening public safety.

H2: The semantic relationships in which warehouses are discussed versus housing, jobs and the economy, and public safety will differ significantly.

Local governments play a significant role in land usage and development, as they establish zoning guidelines and approve building permits for new structures.[10] As such, the approval of new warehouses is largely decided by the city councils in the IE. H1 is motivated by the significant number of warehouses in the IE (Figure 2); as such, it can be assumed that city councils discuss the issue of warehousing at a high frequency. Given that there are over 4,000 warehouses in the IE, it suggests that within city council meetings, a large portion of time has been allocated to discuss warehousing and the expansion of this industry. Additionally, the rapid growth of warehouses signals that the expansion of

[9] Inland Empire United Education Fund. Data for Social Good Foundation. 2024. "Inland Empire Community Survey." https://dataforsocialgood.org/research/, https://ieunitededfund.org/.
[10] "Permits & Inspections | California Department of Housing and Community Development." *Ca.gov*, 2019, www.hcd.ca.gov/building-standards/permits-and-inspections.

this industry is potentially prioritized over other issues. Consequently, I hypothesize that conversations surrounding warehousing will be significantly higher than discussions on housing, jobs and the economy, and public safety. Since I expect to find that warehousing is discussed at a high rate, I hypothesize that when discussing warehousing, the context will differ when compared to the other issues (H2). Specifically, when discussing warehousing, there will be an emphasis on 1) approving new proposals and 2) building more warehouses. I expect the context for these conversations will center around expansion and further development. Yet in the case of conversations on housing, jobs and the economy, and public safety, I hypothesize that the context will not have an actionable approach, and therefore a lack of emphasis on 1) improving these issues and 2) approving new programs and initiatives to address these issues.

To test my hypotheses, I conduct a text analysis using a Latent Dirichlet Allocation (LDA) and a Structural Topic Model (STM) that I apply to city council meeting agendas for the cities/regions of interest *(described in 1.2 Background)*. By doing so, I find that IE cities discuss warehouses at a higher rate when compared to other issues (H1), and semantically, when discussing warehousing, I find a greater focus on approval and development of new spaces which is not as present in the other issues (H2). Through this research, I build upon the existing research on environmental injustice and exclusionary zoning practices by delving into the reasoning and language that local elected officials use on the issue of warehousing. Moreover, I shed light on the way local officials approach the warehousing crisis, and determine the extent to which they facilitate the growth of harmful industrial practices across the IE.

1.2 Background

To fully understand the level of industrial sprawl in the IE, Figure 2 visualizes the distribution of warehouses across the region. The purple shapes represent the individual warehouses and the brown

lines represent the 10, 15, and 215 freeways. As this Figure depicts, warehouses are heavily concentrated in the most western end of the IE, with Ontario, Fontana, Rialto, Chino, and the March Joint Powers Authority having the most warehouses in regards to warehouse footprint, the percentage of the region covered by warehouses, and the number of warehouses.[11] Combined, these jurisdictions contain 1,459 (one-third of all warehouses in the IE) warehouses and counting. Given that this is where most of the IE warehouses are concentrated, my analysis focuses on the city councils of these 5 cities/regions.[12]

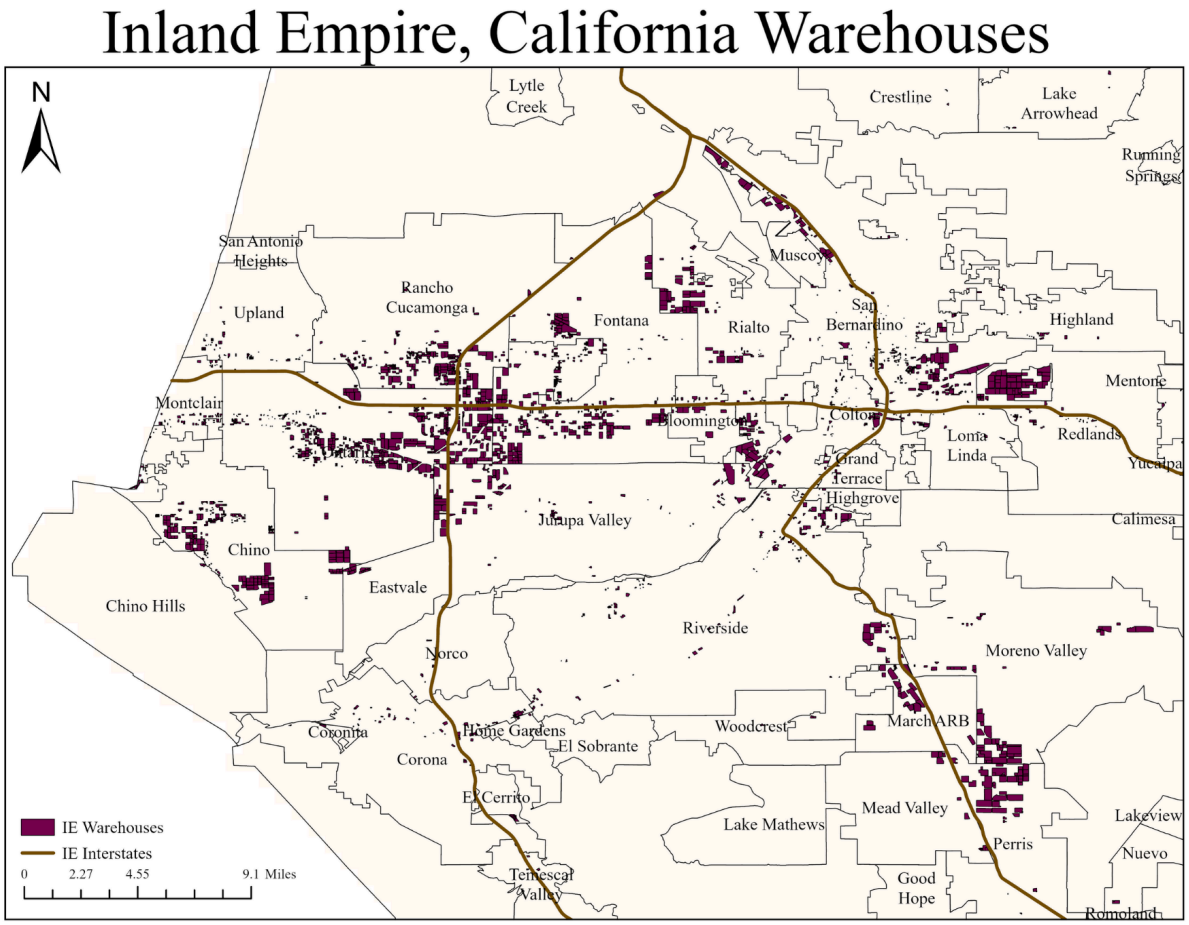


Figure 2: Inland Empire, CA Warehouses

[11] Horseman, Jeff. "Which Inland Empire cities have the most warehouses?" *Press Enterprise*. https://www.pressenterprise.com/2022/12/19/which-inland-empire-cities-have-the-most-warehouses/#:~:text=McCarthy%20said%20the%20map%20also,rounding%20out%20the%20 top%20 five.

[12] NOTE: The March Joint Powers Authority was home to the March Air Force Base from 1918-1996, but it is now a reserve base. 4,400 acres of property are available after this switch, which is used for industrial development. The March JPA is overseen by elected officials from Riverside County, Moreno Valley, Perris, and Riverside. https://marchjpa.com/about/.

Despite the significant role that local governments play in policy and decision-making, conversations surrounding policymaking place a larger emphasis on the role that the federal government has.[13] Yet the issues that impact Americans on a day-to-day basis stem from the role that local policy makers play in decision making. According to The Hamilton Project, the U.S. federal government spends over $4.3 trillion annually and state and local governments spend around $2.9 trillion. However, two-thirds of federal spending is redistributed back to state and local governments, which is then used to invest in education, infrastructure, housing, and more.[14] That being the case, local and state governments have a larger role in decision making than the federal government in the policymaking process. Despite this decision making power, local governments are not typically placed at the forefront of political debates, yet local representatives carry power in shaping the lives of the average American as they plan out cities and regulate the building of structures.

Local governments and municipalities are charged with developing their own zoning ordinances, with intervention from state entities only when deemed necessary.[15] Zoning districts are typically broken down into residential, commercial, industrial, agricultural, rural, and historic zones, each with their own guidelines and regulations. Warehouses, manufacturing, and production centers can be found in industrial zones, which are typically broken down into light, general, and heavy industrial zones. Light industrial includes manufacturing that does not use capital-intensive machinery or production equipment. General industrial zones allow for the manufacturing of goods from raw materials. Heavy industrial zones use capital and energy-intensive machinery such as chemical and power plants.[16] When reviewing zoning ordinances of these cities/regions, it is apparent that the regulations are unclear and

[13] Nunn Ryan, Parsons Jana, Shambaugh Jay. Nine Facts about State and Local Policy. The Hamilton Project. 2019. https://www.brookings.edu/wp-content/uploads/2019/01/StateandLocal_Facts_Web_20190128.pdf.
[14] Nunn Ryan, Parsons Jana, Shambaugh Jay. Nine Facts about State and Local Policy. The Hamilton Project. 2019. https://www.brookings.edu/wp-content/uploads/2019/01/StateandLocal_Facts_Web_20190128.pdf.
[15] Vankin, Jonathan. "Zoning Out: Why We Have Zoning Laws, and How They Shape California and Society (Not Always for the Best)." *California Local*, 15 June 2023, californialocal.com/localnews/statewide/ca/article/show/42216-zoning-laws-california-racial-segregation-development/.
[16] Novick, Ilana. "What Is Industrial Zoning? Light vs Heavy Industrial Zones." *Lev*, 10 Nov. 2021, https://levcapital.com/blog/financing/industrial-zoning/.

ambiguous which has allowed local elected officials to place warehouses near sensitive receptors which the Environmental Protection Agency (EPA) defines as hospitals, schools, elderly housing, etc.[17]

Based on survey responses discussed earlier, some advocates and locals across the IE feel as if there is little regard for the health and environmental degradation of communities of color, as these cities continue to allow warehouses to be built next to homes, schools, daycare, healthcare facilities, and other sensitive receptors. When reviewing the zoning ordinances for the cities/regions of interest, I find that the language is ambiguous, allowing for loopholes that continue to feed the warehousing industry. The city of Ontario, for example, with 650 warehouses that account for 15.9% of the total land area, has the highest concentration of warehouses in the IE. Ontario is in the process of converting a cattle feedlot into the largest Amazon warehouse in the world, totaling 4.1 million square feet and 97 feet tall, with plans underway as of May 2022. This new development will be only 4 miles away from a residential zone, a park, and Ranchview Elementary School. Adjacent to this will be an additional 8 warehouses, covering 5,333,518 square feet, and just down the road from that will be 6 more warehouses taking up approximately 1,640,690 square feet.[18]

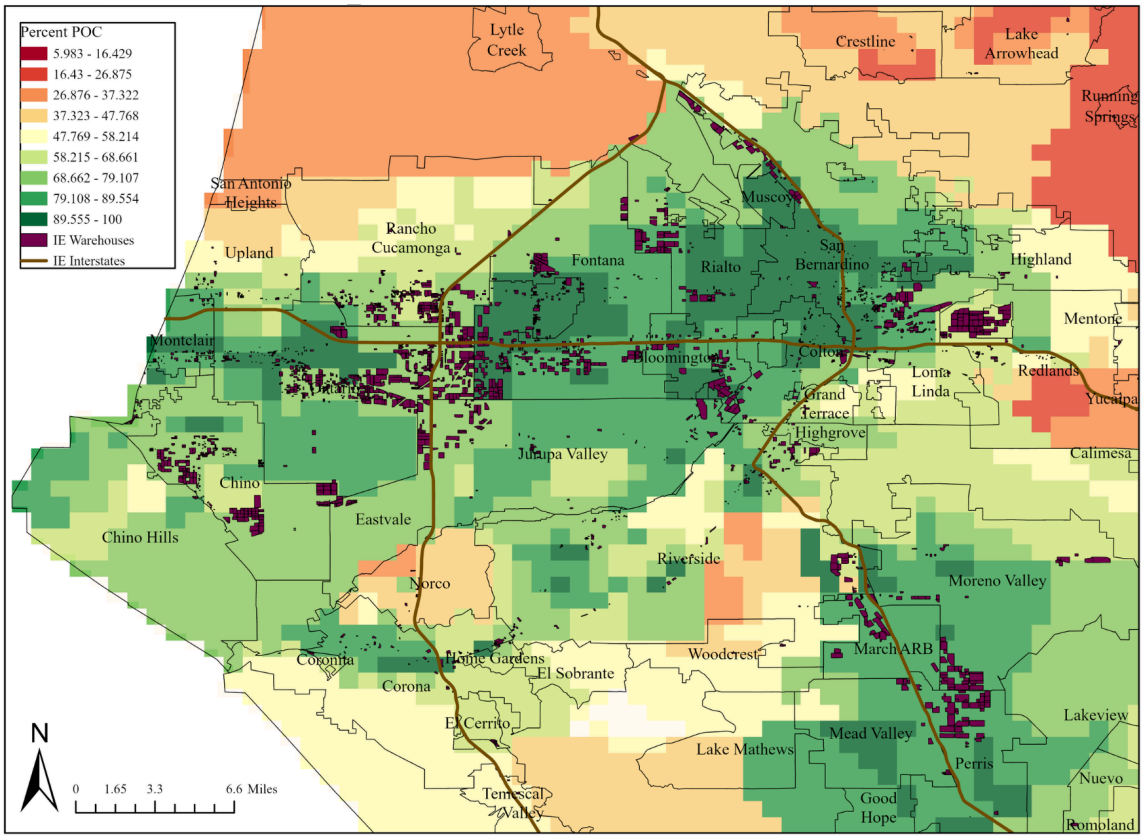
Ontario's zoning guidelines[19] are ambiguous, and fail to clearly define the distance between residential and industrial zones. Light industrial zones are said to be "typically" within 500 feet of residential areas, public parks, and schools, however there is no strict guideline that they cannot be closer than that. Similarly, general industrial zones are "generally" and heavy industrial zones are "intended" to be located away from residential areas, public parks, and schools, but there is no exact distance that protects residents from the effects of warehousing. Failure to establish proper zoning

[17] Environmental Protection Agency. (2024). Environmental Issues of Concern for Urban Communities: Resources. https://www.epa.gov/newenglandhc/environmental-issues-concern-urban-communities-resources#ParticulateMatter.
[18] Ontario, City of. *Ontario Ranch Business Park Specific Plan Amendment (PSPA21-002, PGPA21-001)*, 17 June 2022, https://ceqanet.opr.ca.gov/2019050018/7.
Ontario, City of. *South Ontario Logistics Center Specific Plan (PSP19-001 and PGPA19-004)*, 4 Mar. 2022, https://ceqanet.opr.ca.gov/2021010318/5.
[19] Ontario, CA. Zoning and Land Usage. https://www.ontarioca.gov/sites/default/files/Ontario-Files/Planning/Documents/Development%20Code/Development%20Code%202021%20Updates/Chapter%205.0%20-%20Zoning%20and%20Land%20Use_Rev%2012-01-2020.pdf

guidelines has allowed corporations and the city to continue expanding this harmful industry, bringing it into people's backyards and communities.

As Figure 3 demonstrates, most of these warehouses have been disproportionately built in low-income communities of color who are faced with the greatest environmental and health risks due to their proximity to these industries. Figure 3 presents the percentage of POC in a given census tract as a proportion of the total population in that tract. POC communities are where IE warehouses are located, with warehouses found in areas where over 58% of the population is POC. Moreover, the patterns presented in Figure 3 indicate that majority white areas, even if they are along a major highway, contain little to no warehouses. Similarly, Figure 4 highlights the percentage of the population in a given census tract who lives below two times the federal poverty level. Low income communities, where over 41% of the population lives below the poverty level are where warehouses are located. As established by the existing literature, these patterns solidify the understanding that LULUs (locally undesirable land uses), such as warehouses, are disproportionately placed in low-income minority communities.

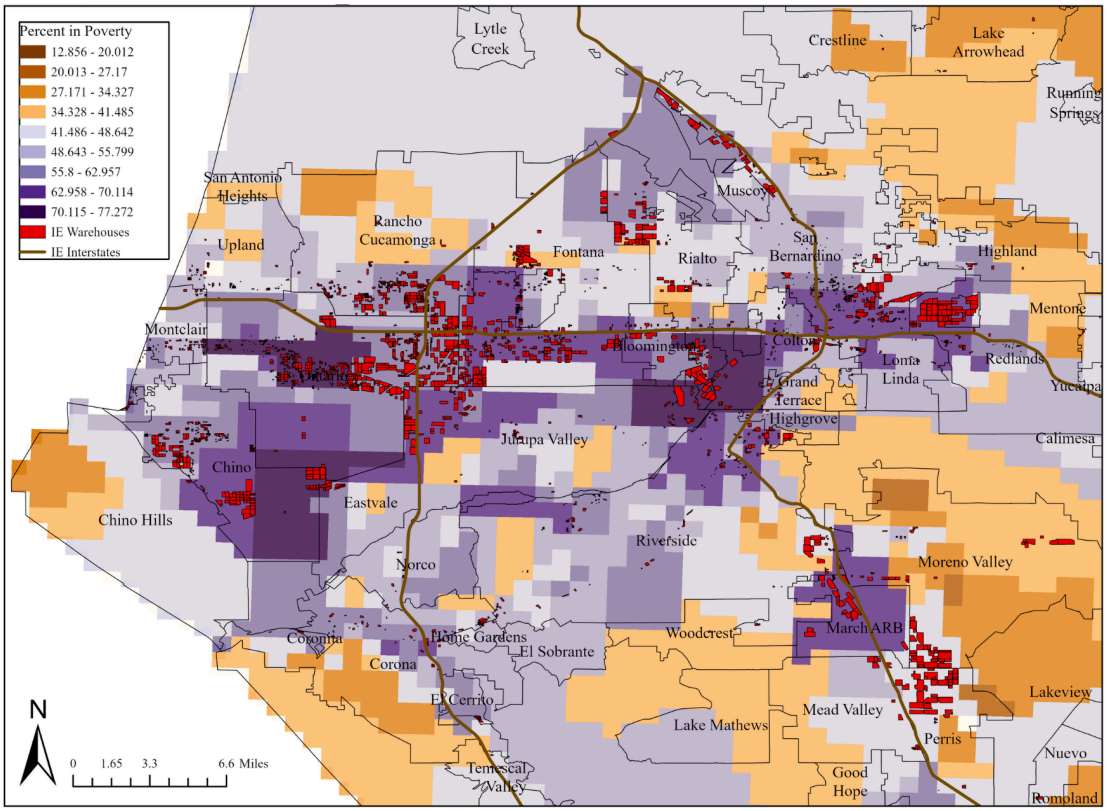
IE Percentage POC and Warehouses



Created By: Alyson Otañez
Sources: U.S. Census Tiger Files County & Places. Pitzer College IE Warehouses. U.S. Census 2020 Race and Ethnicity.

Figure 3: Inland Empire, CA Warehouses and Percent POC

IE Poverty Percentage and Warehouses



Created By: Alyson Otañez
Sources: U.S. Census Tiger Files County & Places.
Pitzer College IE Warehouses. California OEHHA.

Figure 4: Inland Empire, CA Warehouses and Percent Poverty

For decades, environmental justice advocates have argued that low-income communities of color face disproportionate environmental and health risks from locally undesirable land uses (LULUs) compared to their affluent white counterparts. Past research indicates that areas with LULUs (hazardous waste facilities, landfills, factories, etc.), on average, have higher proportions of minorities compared to areas without them.[20] These communities suffer from harmful environmental and health outcomes, with no clear benefits from the industries that surround them. Studies indicate that, despite economic gain driving these industries into marginalized communities, the existence of industrial facilities in a

[20] Been, Vicki. What's Fairness Got to Do with It? Environmental Justice and the Siting of Locally Undesirable Land Uses , 78 Cornell L. Rev. 1001 (1993) Available at: http://scholarship.law.cornell.edu/clr/vol78/iss6/1.

community does not translate to jobs for its members.[21] It is often people outside of the community who work in these spaces and who do not have to deal with the negative impacts of LULUs.

LULUs, while oftentimes consisting of essential spaces, play a large role in the NIMBY (not in my backyard) movement in which community members agree that LULUs should exist, just not near their homes. The NIMBY phenomenon is fueled by local and federal representatives who seemingly adhere to the demands of the movement, and have historically created poor conditions for marginalized communities. Through exclusionary zoning, the rezoning of communities of color has allowed harmful industrial and waste practices to be built within these neighborhoods with minimal regard to the negative impact they have. Contrary to the belief that people of color were pushed into areas where these industries were already present, research suggests that discriminatory zoning practices have brought in these industrial practices that result in poor environmental and health outcomes to communities of color.[22]

When considering the environmental and health impact of industrial practices to marginalized communities, areas with high concentrations of warehouses suffer from extreme levels of particulate matter and ozone. Particulate matter 2.5 (PM2.5)[23] is a mixture of various pollutants that are inhaled resulting in various respiratory and environmental issues. Ozone is a highly reactive gas that can lead to various respiratory and environmental issues. The IE has the highest concentrations of ozone in the country, and areas with high concentrations of warehouses have higher levels of ozone. Figure 5 combines ozone and PM2.5 to identify areas in the IE with the highest environmental and health risks. Regions with warehouses have greater risks compared to areas with small amounts of warehouses, and these regions have higher proportions of POC and percentage of people in poverty.

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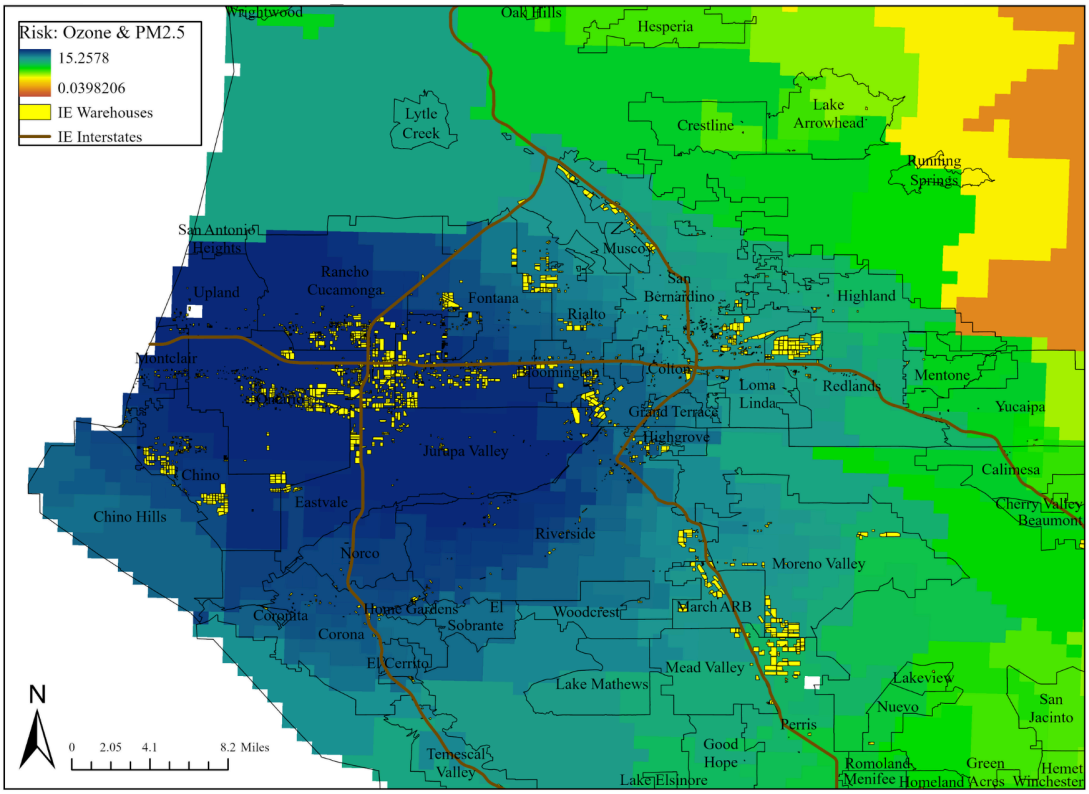
[21] Bullard, Robert D. 1999. “Dismantling Environmental Racism in the USA.” *Local Environment* 4 (1): 5–19. doi:10.1080/13549839908725577.
[22] Dubin, Jon C., "From Junkyards to Gentrification: Explicating a Right to Protective Zoning in Low-Income Communities of Color" (1993). *Minnesota Law Review*. 1683. https://scholarship.law.umn.edu/mlr/1683.
[23] California Air Resources Board. Inhalable Particulate Matter and Health (PM2.5 and PM10). 2024. https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health.

IE Environmental Risk and Warehouses



Created By: Alyson Otañez
Sources: U.S. Census Tiger Files County & Places. Pitzer College IE Warehouses.California OEHHA.

Figure 5: Inland Empire, CA Warehouses and Environmental Risk

For the marginalized communities that live in such close proximity to industrial warehouses, long-term exposure to PM2.5 and ozone can lead to adverse health effects. Researchers studied the premature mortality due to PM2.5 in Beijing, China across a 12 year period and found that the estimated average total mortality due to PM2.5 is about 5,100 individuals per year for the period 2001–2012 in the Beijing central area, and for the period 2010–2012 the per capita mortality for all ages due to PM2.5 is around 15 per 10,000 person-years.[24] Another study measured the health impacts of long-term ozone exposure in China and found that within just 5 years, there were an average of 186,000 respiratory deaths and 125,000 cardiovascular deaths attributable to ozone exposure. In urban areas they find that

[24] Zheng, S., Pozzer, A., Cao, C. X., and Lelieveld, J. 2015. "Long-term (2001–2012) concentrations of fine particulate matter (PM2.5) and the impact on human health in Beijing, China." *Atmos. Chem. Phys.*. 15, 5715–5725. https://doi.org/10.5194/acp-15-5715-2015, 2015.

there were 73,000 premature respiratory deaths, accounting for 39% of total deaths.[25] These findings signal the dire need to address and understand the environmental injustice and crisis taking place in the IE in order to mitigate the dangerous and fatal health outcomes to the marginalized communities who are being exposed to toxic levels of PM2.5 and ozone.

While efforts at the national level have addressed these disproportionate building practices, stronger efforts have not been made to prevent communities from becoming "sacrifice zones" for industrial activities. For example, Executive Order 12898 signed by President Bill Clinton in 1994 directed federal agencies to address environmental justice in minority low-income communities, but had no enforceable metrics for reporting and action. This lack of accountability and responsibility at the federal level has left local governments with unclear guidelines when it comes to environmental protection and justice. Zoning laws and the approval of new developments are decided by representatives at the local level, who believe that it is the responsibility of the state to address broader environmental justice issues.[26] A survey of U.S. local government officials from 2021 finds that many officials view environmental inequality primarily through an income-based lens, with 63.7% recognizing low-income households as more vulnerable to pollution, and only 40% recognizing racial inequalities, specifically that Black people face higher exposure than White people. Conservatives are especially unlikely to believe in race-based environmental inequality, with only 21% endorsing this view, compared to 81% of Liberals. This study also finds that representatives with higher racial resentment are less likely to acknowledge environmental inequalities, and they are also less likely to support policy interventions.[27] These attitudes highlight the need for stronger policies at the local, state, and federal level that adequately address

[25] Y. Wang, O. Wild, X. Chen, Q. Wu, M. Gao, H. Chen, Y. Qi, Z. Wang. 2020. “Health impacts of long-term ozone exposure in China over 2013–2017” *Science Direct*. Environ. Int., vol. 144 (2020), 10.1016/j.envint.2020.106030

[26] Bugden, Dylan. "Color-blind racial ideology and beliefs about environmental inequality among local US government officials." *Environmental Politics*, vol. 33, no. 4, 2024, pp. 635-656. *ProQuest*, https://www.proquest.com/scholarly-journals/color-blind-racial-ideology-beliefs-about/docview/3057614122/se-2, doi:https://doi.org/10.1080/09644016.2023.2265278.

[27] Bugden, Dylan. "Color-blind racial ideology and beliefs about environmental inequality among local US government officials." *Environmental Politics*, vol. 33, no. 4, 2024, pp. 635-656. *ProQuest*, https://www.proquest.com/scholarly-journals/color-blind-racial-ideology-beliefs-about/docview/3057614122/se-2, doi:https://doi.org/10.1080/09644016.2023.2265278.

environmental justice issues in the U.S. Researchers argue the need for federal policies to provide local administrators with clear direction in the appropriate way to implement policies in a manner that recognizes community realities such as levels of exposure, biological effects, proximity to pollution sources and disenfranchisement from the political process. Posing that current guidelines and regulations regarding environmental justice have not been actualized in minority communities, emphasizing the need for administrative agencies to examine the agency and community values that impact policy implementation.[28]

With this in mind, it is important to understand that while the federal government represents the United States on the international stage on climate and environmental policy, some local governments have taken charge of climate change mitigation locally. Local governments opposed the United States existing the Paris Climate Accord during the 2016 Trump administration[29], adopted climate mitigation and adaptation plans[30], and joined networks of local governments who work to tackle climate change.[31] However, research indicates that such willingness from local governments to adopt policies and rework their infrastructure to reduce greenhouse gas emissions is heavily influenced by the ideology and partisanship of the residents they serve. A 2022 study found that ideology and issue severity influence whether or not local governments will enact policies to mitigate the effects of climate change. However, when the constituents identify as conservative and Republican, issue severity has no impact on government responsiveness to climate change.[32]

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[28] Strong, Denise, and Kathy Allen Hobbs. 2002. "Administrative Responses to Environmental Racism." *International Journal of Public Administration* 25 (2–3): 391–417. doi:10.1081/PAD-120013242.

[29] Arroyo, Vicki, "From Paris to Pittsburgh: U.S. State and Local Leadership in an Era of Trump" (2019). *Georgetown Law Faculty Publications and Other Works*. 2188.
https://scholarship.law.georgetown.edu/facpub/2188.

[30] Kalafatis, S. E. (2018). Comparing climate change policy adoption and its extension across areas of city policymaking. Policy Studies Journal, 46(3), 700–719. https://repository.library.noaa.gov/view/noaa/64086.

[31] Sharp, E. B., Daley, D. M., & Lynch, M. S. (2011). Understanding local adoption of climate change mitigation policy. Urban Affairs Review, 47(3), 433–457. https://journals.sagepub.com/doi/pdf/10.1177/1078087410392348.

[32] Switzer, D., & Jung, J. (2023). Contextual responsiveness in U.S. local government climate policy. *Review of Policy Research*, 40, 920–949. https://doi.org/10.1111/ropr.12518.

Table 1[33] presents the 2024 voter registration of the cities/regions of interest, overall most registered voters are registered as Democrats ranging from 39.4% in Chino to 49.6% in Rialto. Republican registration is much lower, accounting for less than one-third of registered voters in each city/region, ranging from 19.1% in Rialto to 31.9% in Chino. Despite making up the majority, of the 5 mayors (chair in the case of the March Joint Powers Authority), only 1 is affiliated with the Democratic Party. This discrepancy can likely be attributed to the fact that the IE has low voter turnout, with less Democrats turning out to vote than Republicans. In the 2024 Presidential Election, voter turnout of registered voters was 64.4% in San Bernardino County and 69.9% in Riverside County, less than the state average of 71.4%.[34] In both counties, Republican candidate Donald Trump beat Democratic candidate Kamala Harris[35], managing to flip both counties from 2020. With this in mind, existing scholarship[36] indicates that elected officials are motivated by re-election, and thus are more inclined to satisfy and represent the needs of their voting base rather than their constituents as a whole. Meaning, that in the case of the IE, local elected officials will act along their party lines, representing Republican and Conservative values and policies that do not prioritize environmental protection.

[33] California Secretary of State. October 21, 2024. Registration by Political Subdivision by County. https://elections.cdn.sos.ca.gov/ror/15day-gen-2024/politicalsub.pdf.
[34] California Secretary of State. November 5, 2024. Voter Participation Statistics by County. https://admin.cdn.sos.ca.gov/elections/sov/2024-general/sov/03-voter-participation-stats-by-county.pdf.
[35] California Secretary of State. November 5, 2024. President by County. https://admin.cdn.sos.ca.gov/elections/sov/2024-general/sov/16-president.pdf.
[36] Christensen, Darin, and Simon Ejdemyr. "Do Elections Improve Constituency Responsiveness? Evidence from US Cities." *Political science research and methods* vol. 8,3 (2020): 459-476. Doi: 10.1017/psrm.2018.46. https://pmc.ncbi.nlm.nih.gov/articles/PMC7299200/.

Voter Registration and Representation

City/Region	Registered DEM	Registered REP	Registered NPP	Mayor	Mayor Party	Years in Office
Ontario	46.3%	24.1%	21.8%	Paul S. Leon	Republican	20
Fontana	47.3%	22.8%	22.3%	Acquanetta Warren	Republican	15
Rialto	49.6%	19.1%	22.8%	Deborah Robertson	Democrat	13
Chino	39.4%	31.9%	21.2%	Eunice Ulloa	Republican	9
March Joint Powers Authority	45.7%	25.2%	21.2%	Michael Vargas (chair not mayor)	Republican	2

Table 1: Party Registration and Elected Officials in the IE

Chapter 2: Data and Research Design

2.1 Research Design

To test my hypotheses regarding the policy discussions of local elected officials in the IE, I analyzed the city council meeting agendas for the cities/regions with the highest concentrations of warehouses (as shown in Figure 2, these regions are Ontario, Fontana, Rialto, Chino, and the March Joint Powers Authority). These meeting agendas include the entire content of what was discussed during a meeting, including new proposals, issues in the city, budget allocations, etc.

I analyzed this textual data utilizing a Latent Dirichlet Allocation (LDA) and a Structural Topic Model (STM) which differentiate between the context of words in a text and provide frequency of words and topics. To determine what issues to contrast with warehousing, I look at public opinion data on the needs and concerns of IE voters. According to a 2024 study from Data for Social Good (DSG),[37] IE voters are most concerned with housing, jobs and the economy, and public safety (average scores 3.16, 3.21, and 3.40 respectively). While the environment ranked last (6th) with an average score of 3.98. With the expectation that elected officials at all levels exist to actively address the needs of their constituents, one would expect that these three top issues should be the most frequently discussed during council meetings.

Given the rapid growth of warehouses[38] I hypothesize that the frequency of discussions pertaining to warehouses will be greater than these three issues (H1), which if true, would suggest that the warehouse industry and its growth is a greater priority to the IE local governments. Secondly, I hypothesize that the semantic relationships surrounding these discussions will differ (H2), meaning that when discussing warehouses the context will revolve around approving and building new centers while

[37] Inland Empire United Education Fund. Data for Social Good Foundation. 2024. "Inland Empire Community Survey." https://dataforsocialgood.org/research/, https://ieunitededfund.org/.

[38] College, Pitzer. "Mapping and Environmental Data Visualization." *Robert Redford Conservancy for Southern California Sustainability*. 29 December 2022. https://www.pitzer.edu/redfordconservancy/mapping-data-visualization/.

when discussing the other issues there will not be an emphasis on improving the issues or approving proposals to address them.

2.2 Data

The five cities/regions of interest that I examine all publicly post their meeting agendas on their respective websites which include the entire content of what was discussed and approved within a given meeting.[39] It is important to note that these agendas are bullet points and summaries of the meeting, and are not in depth transcripts of conversations and discussions. However, this is the information that these local governments choose to share with the public and they serve as a useful metric to determine what they value and work towards in their meetings. To access this data, I used web scraping techniques in R and Python[40] to gather the text of the discussions for each of their meetings.[41] I created a dataset with columns including: the entire text of a given agenda, the date of the meeting, the year the meeting was held, and the city corresponding to the agenda. The datasets for the five cities/regions were combined for a total N = 5,526 with meeting agendas and minutes ranging from 1988-2023.

2.3 Pre-Processing the Data

Prior to conducting the STM and LDA analysis, I prepared the text by removing all HTML tags, removing punctuation, standardizing by converting to lowercase, removing numbers and punctuation etc. As described in Figure 6, I began by creating a list of keywords for each topic of interest, including words that would correspond to a respective topic. To classify the documents, for each keyword list, I counted the amount of times words within each list appeared in a text. Once these totals were calculated, to classify the text as belonging to a certain topic, I took the highest total and labeled the

[39] Example Meeting Agenda from Ontario, CA. https://drive.google.com/file/d/1zyoHL8yh3OENO_4o6I9F-OWSNcx1gHcu/view?usp=sharing.
[40] Otañez, Alyson. Web Scraping. GitHub. https://github.com/aotanezz/IE_Council_Analysis/tree/main/Web_Scraping.
[41] Otañez, Alyson. Data. GitHub. https://github.com/aotanezz/IE_Council_Analysis/blob/main/Data/sample.csv.

document as such. This classification allows for comparisons to be made between documents in the STM analysis.

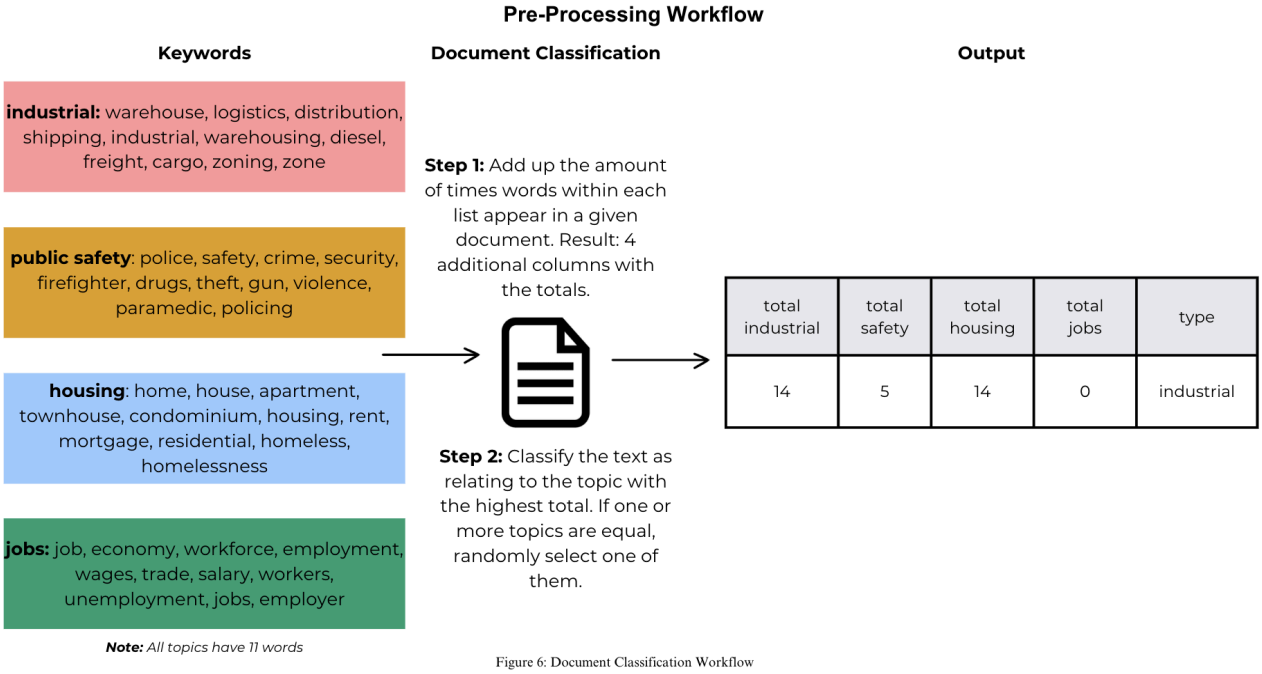


Figure 6: Document Classification Workflow

2.4 Methodology

Latent Dirichlet Allocation (LDA)

To test H1, I applied a Latent Dirichlet Allocation (LDA)[42] model to my corpus (combined data of all cities). LDA is the most common topic model in natural language processing (NLP) that applies unsupervised machine learning to textual data to create a group of terms that summarize the document's topics. LDA treats individual documents as a collection of texts in a bag of words model, focusing on term frequency and co-occurrence rather than word order and context. LDA topic models group co-occurring words into a set of topics, wherein each topic represents a probability distribution across the corpus, and classifies a given text into a document and presents the words per topic (Figure

[42] Murel, Jacob. Train an LDA topic model for text analysis in Python. *IBM*. 2024. https://developer.ibm.com/tutorials/awb-lda-topic-modeling-text-analysis-python/.

7). Topics appear in a descending order, and words within the topic also appear in a descending order relative to other words within the topic in terms of frequency. The LDA model allows me to test for H1, and understand what topics best describe the corpus, and which words are most related to one another.

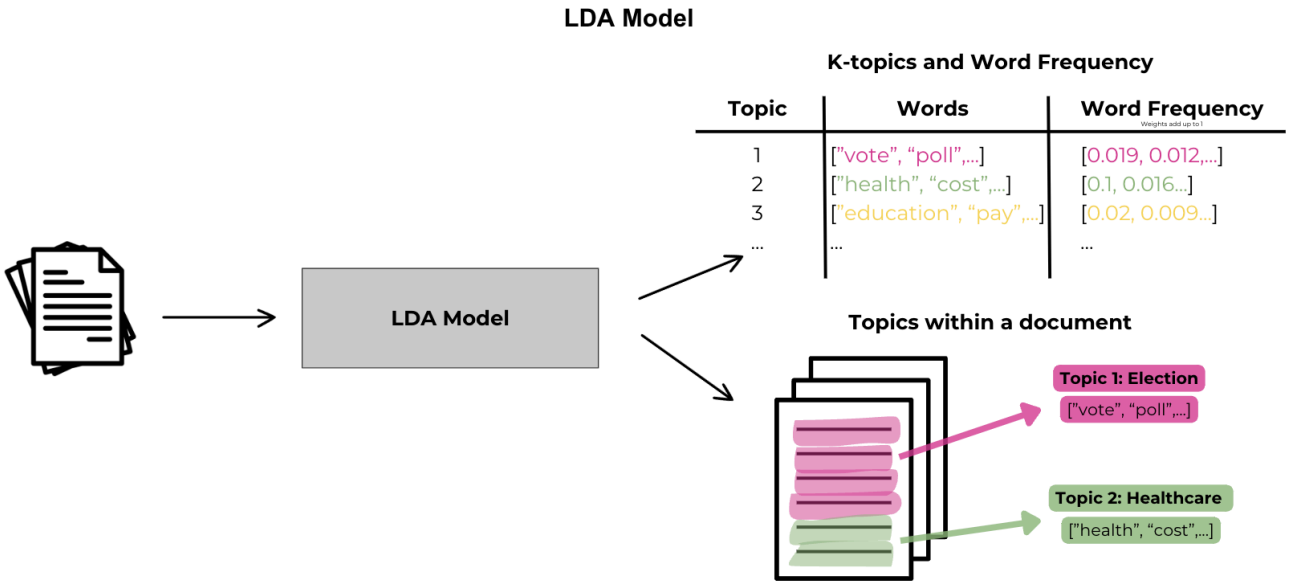


Figure 7: LDA Simplified

Structural Topic Model (STM)

To test H2, I use an structural topic model (STM), which is a generative topic model of word counts, where a topic is defined as a combination of words where each word has a probability of belonging to a given topic. Documents are a mixture of topics, meaning that a single document can be composed of various topics. This means that the sum of topic proportions across all topics for a given document is one, and the total word probabilities for a given topic is one.[43] STM can provide more accurate and quality estimations when comparing documents and topics as it takes into account the context of the documents as well as the impact of word frequency. This model provides contextual information in two ways: topic prevalence and topic content which can both vary by metadata. Topic prevalence refers to the mention of certain words or concepts in a given document; for example,

[43] Roberts E. Molly, Stewart M. Brandon, Tingley Dustin. Stm: R Package for Structural Topic Models. *Journal of Statistical Software*. https://cran.r-project.org/web/packages/stm/vignettes/stmVignette.pdf

Democrats talk more about climate change than Republicans. Topic content refers to the co-occurrence of words, for example, when discussing gun/firearms Democrats are more likely to use the words "control" and "restriction(s)" than Republicans (Figure 8).

I chose this model to contrast how local governments address topics surrounding warehousing relative to programs that benefit communities such as housing, jobs and the economy, and public safety. This model also highlights the topic proportions, meaning what is being discussed at a higher frequency relative to another topic. Functions within the STM package extract the text that is most associated with a given topic, allowing for contextualization of the data and topics to truly understand what is being discussed and how.

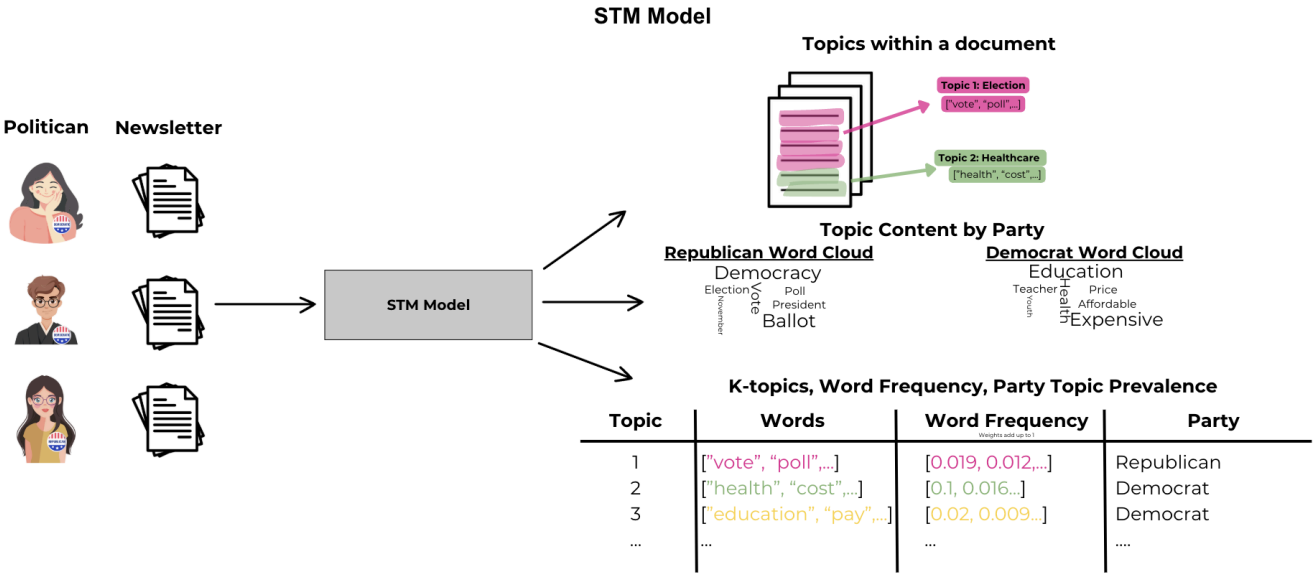


Figure 8: STM Simplified

Chapter 3: Results and Findings

3.1 Latent Dirichlet Allocation Results

To test H1, as discussed in *2.3 Pre-Processing the Data*, I classify documents based on the total mention of keywords in a given text. Table 2 presents the breakdown of this classification. Overall, 42.8% of the documents are classified as industrial, meaning that nearly half of the corpus includes words that are associated with warehousing. The next most common issue is public safety, at 28.1%, and jobs and the economy trails at the bottom with 2.8% of the data mentioning more job/economy keywords. These results signify, for each issue, the percentage of documents that most discuss a given topic.

As another form of exploratory data analysis, Figure 9[44] visualizes the total mention of words in a given topic, depicting the fluctuation in word counts over time (1990-2020)[45]. Overall, housing is the predominant topic during this time period, with industrial words being most mentioned in 2011 (tie with housing), 2013, 2015, and 2022. The results presented in Table 2 and Figure 9 provide a general overview of the data, and highlight how at first glance, conversations surrounding warehousing do appear to be frequent, and in some years, more frequent than the other issues.

Data Classification by Keyword

Keyword Group	Total Documents	Percent of Data
Industrial	2,364	42.8%
Public Safety	1,554	28.1%
Affordable Housing	1,453	26.3%
Jobs & Economy	155	2.8%

Table 2: Data Classification by Keyword

[44] NOTE: Data before 2005 is scarce, resulting in little to no text.
[45] NOTE: Data was scraped June 2023, which is why the data points take a sharp decline.

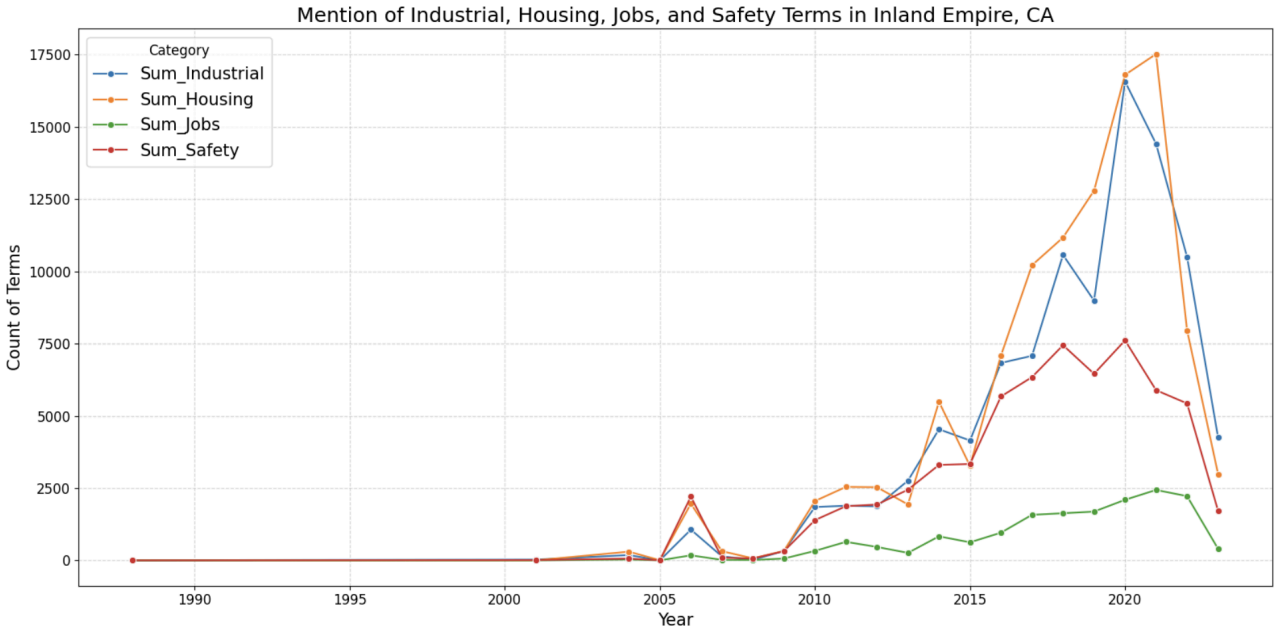


Figure 9: Keyword Mentions Over Time

To gain further insight into the conversations at the city council level, I apply a LDA model to the entire corpus which takes into account term frequency and the co-occurrence of words. Figures 10-12 visualize the results for the top 3 topics[46] (specified K = 6) presenting the weight of the topics, and the most prevalent words in each topic.[47] These figures visualize:

1. The size or prevalence of the topics - the larger the blue circle, the more prevalent the topic is (left side of figure).
2. The intertopic distance map[48] - similar topics (blue circles) will be closer, dissimilar topics will be farther apart (left side of figure).
3. Top 30 terms - the frequency, in descending order, of the most representative terms of each topic (right side of figure).

[46] NOTE: Only discuss the results of the top 3 topics, meaning the 3 most descriptive topics of the corpus because they capture nearly 80% of all tokens. Topics 4-6 are less descriptive and account for only 20% of tokens, and are not as useful to conduct a meaningful interpretation.
[47] NOTE: Top 5 words in topics 4-6 can be found in Appendix C.
[48] NOTE: For the purpose of this study, the intertopic distance is not relevant since the STM is used to understand the relationship between topics and documents. Given that the LDA does not capture semantic and contextual word usage, similarity and dissimilarity is not a relevant data point.

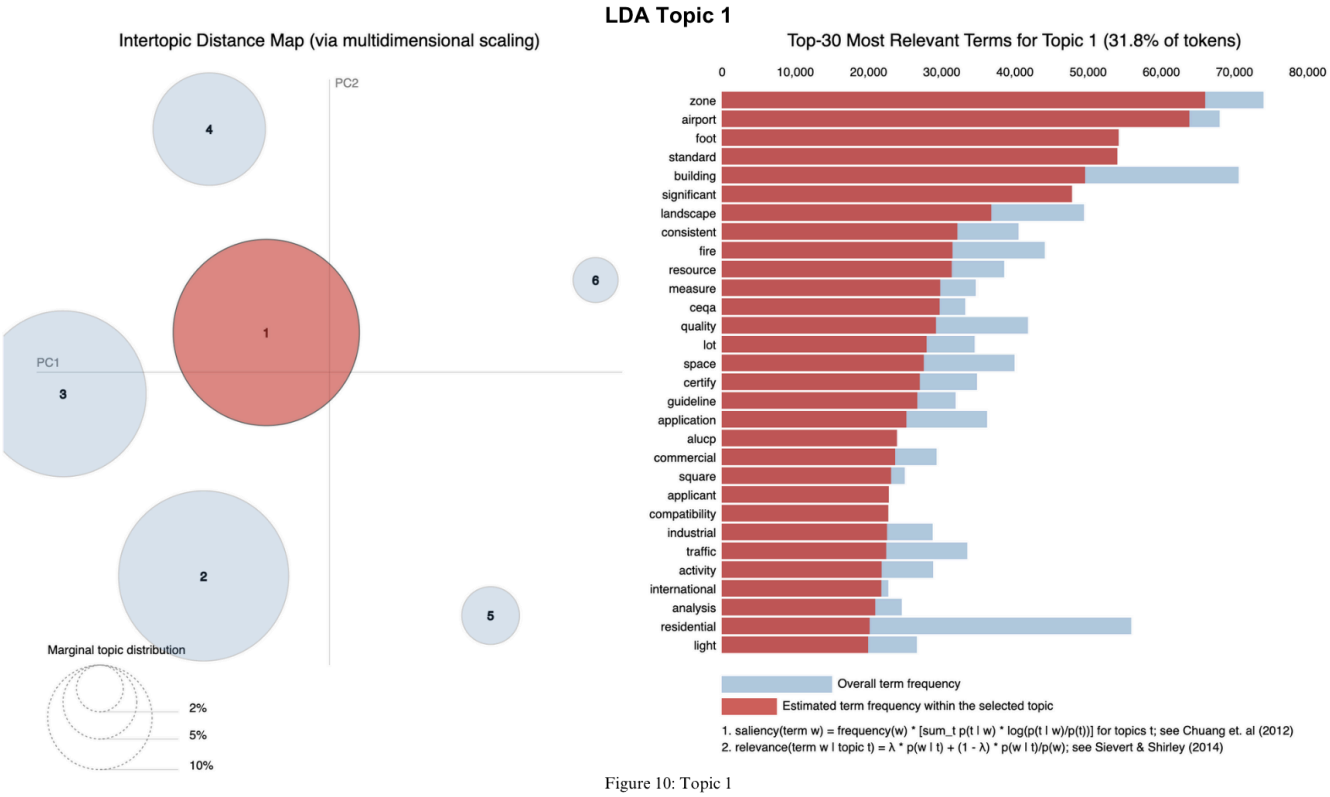


Figure 10: Topic 1

Figure 10 visualizes the frequency of the top 30 terms that contribute to the overall content of topic 1, which accounts for 31.8% of tokens in the corpus. This topic includes words such as “zone”, “building”, “ceqa” (California Environmental Quality Act), and “industrial”. The overarching theme of this topic can be described as relating to land usage, construction, and land development. This language can be explained by dialogue on housing or warehousing developments (H1). However, since this topic is described by words such as “industrial” and “commercial”, I conclude that this topic most relates to warehousing, and the expansion of these spaces. Given that nearly one-third (31.8%) of the corpus’ tokens relate to warehousing, this analysis lends support to H1, that warehousing is discussed more frequently than housing, jobs/economy, and public safety.

Figure 11 displays the term frequency for topic 2 (which is the second most representative topic), and accounts for 26.5% of all tokens in the corpus. This topic encompasses words such as “residential”, “unit”, “housing”, and “owner”. This topic most relates to housing, and with words such as

"building", "material", and "increase" among the top 30 words relating to this topic, I conclude that this topic is about development of new housing projects in the IE. With the understanding that IE residents are most concerned about housing, it is expected that local governments would spend a significant amount of time in their council meetings discussing improving and building new housing. However, this housing topic trails behind the industrial topic (topic 1), which lends support to H1.

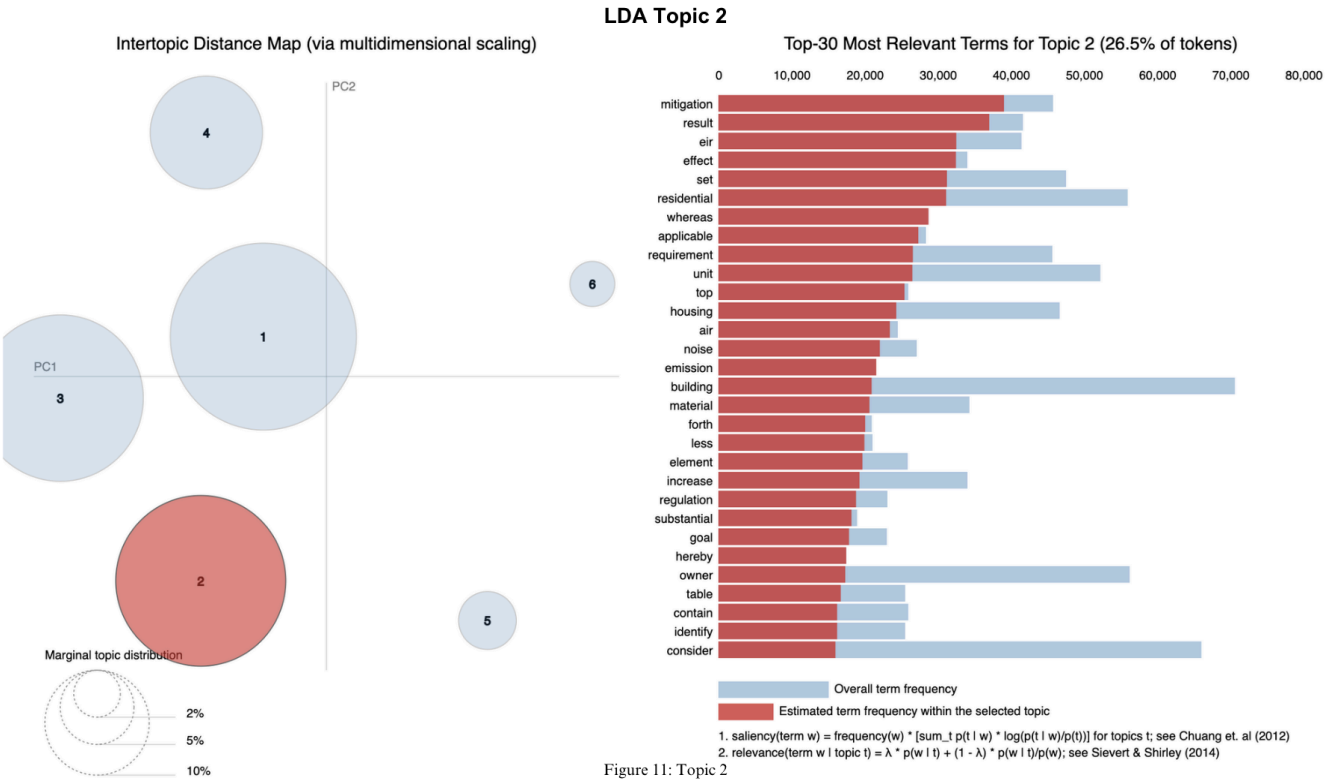


Figure 11: Topic 2

Topic 3 accounts for 25.2% of tokens, visualized in Figure 12, and the overarching theme of this topic can be described as relating most to jobs and the economy, with some focus on housing. This topic includes words such as "cost", "fee", "tax", and "payment", which can likely be attributed to conversations of the economy and the cost of living in the IE. This topic also includes the words "owner", "unit", and "housing", relating to housing and home ownership. As such, this topic can be described as

cost of living and housing, which remains in line with H1, as this is the third topic accounting for one-fourth of the tokens.

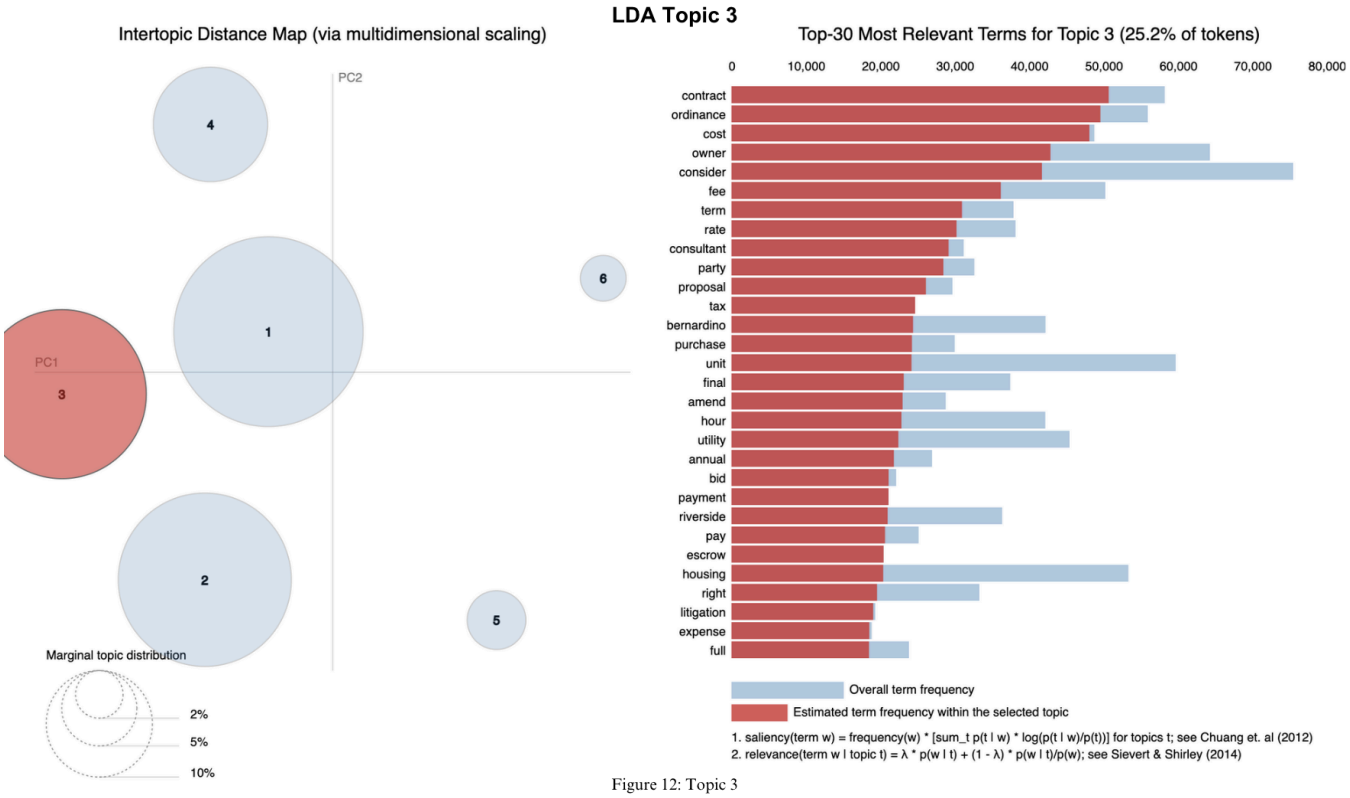


Figure 12: Topic 3

3.2 Structural Topic Model Results

While the LDA is useful for understanding the overall content of the IE council agendas, it lacks the ability to understand the context of words and the impact of word frequency, which provides more accurate comparisons between documents (H2). As such, I test H2 by examining the topical and contextual content for 3 distinct STM models. As presented in Figure 6, the meeting agendas were classified into 4 distinct categories based on the presence of certain keywords. Using these labels I split the data into 4 data sets, and create 3 data sets for analysis combining the industrial labeled data with the other issues (Data set 1: Industrial & Housing, Data set 2: Industrial & Jobs, Data set 3: Industrial &

Public Safety). In each model I specify K = 10 topics due to the larger size of each data set. The figures below visualize a topic model for each data set, such as Figure 13, which depicts the 10 topics (in descending order) and their proportion within the corpus as well as the 10 words most associated with it. The covariate level plots, such as Figure 14, visualize how each topic is correlated to a given label. For example, in Figure 14, topics to the right of the dotted line are statistically related to industrial labeled documents, and topics to the left are statically related to housing labeled documents.

Industrial vs. Housing

The following section applies a joint STM model for documents classified as industrial and housing to determine the differences in topic proportions and prevalence between the two. Figure 13, while similar to the LDA model, displays the topic proportions and the 10 most associated words for each topic considering the context of the words. The top three topics include words such as “approve”, “project”, and “plan”, suggesting that the IE is discussing and approving the development of new infrastructure and spaces at a high rate.

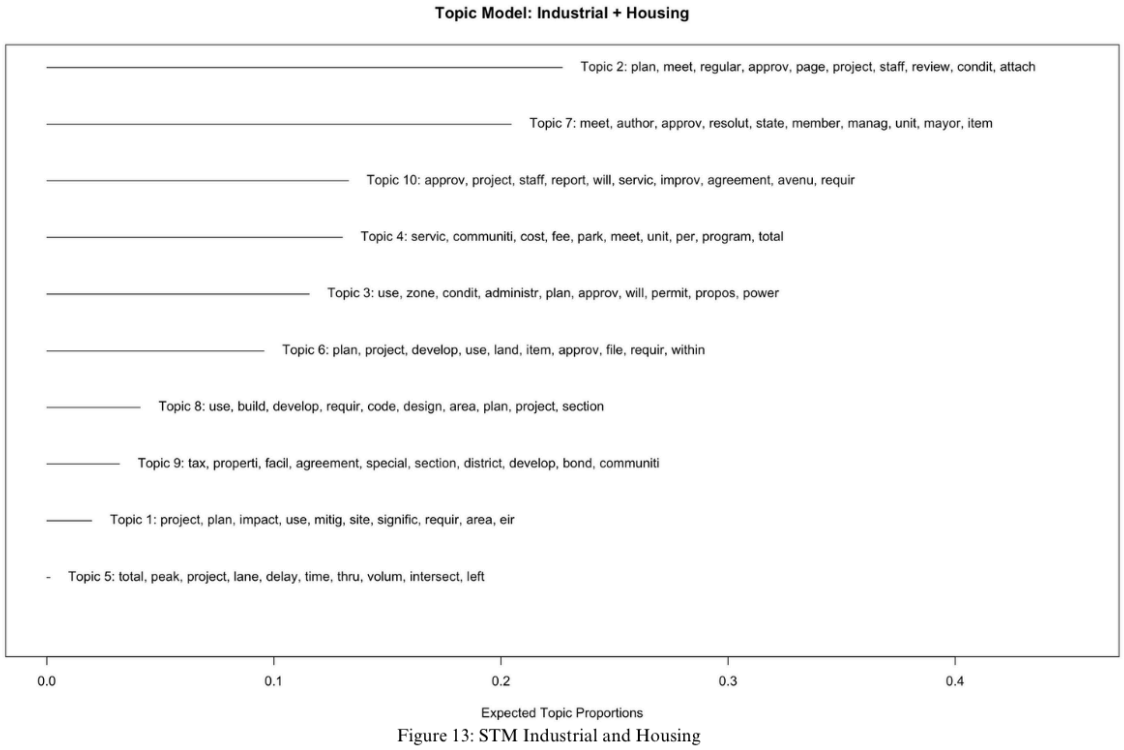


Figure 13: STM Industrial and Housing

To further understand these topics and how they vary based on the label of the document, I use the estimateEffect[49] function to plot the covariate (document label) relationship to the topics (Figure 14). Topic 2, 3, and 4 are statistically (95% confidence interval) more associated with industrial documents, while topics 6, 7, 9, and 10 are statistically more related to housing documents. Notably, topic 2 is the most prevalent topic in the data, and includes words such as “approve” and “project”.

Topic 2 is most associated with industrial documents, and topic 10 is most related to housing documents. To determine how these topics differ, I plot the two topics (Appendix D), which calculates the difference in probability of a word across the two topics. When discussing warehousing, IE representatives are more likely to use words such as “zone”, “permit”, and “plan”. In housing documents, IE council members are more likely to mention “improve”, “project”, and “develop”. These results fail to distinguish between the semantic content when discussing warehousing and housing in the IE, and do not support H2. These results suggest that IE city councils indeed are discussing warehousing in the context of approving new facilities and expanding this industry, and the same is implied from housing conversations.

[49] NOTE: The plot only includes topics that were statically significant to either document type. Meaning topics whose error bars were not over the dotted line.

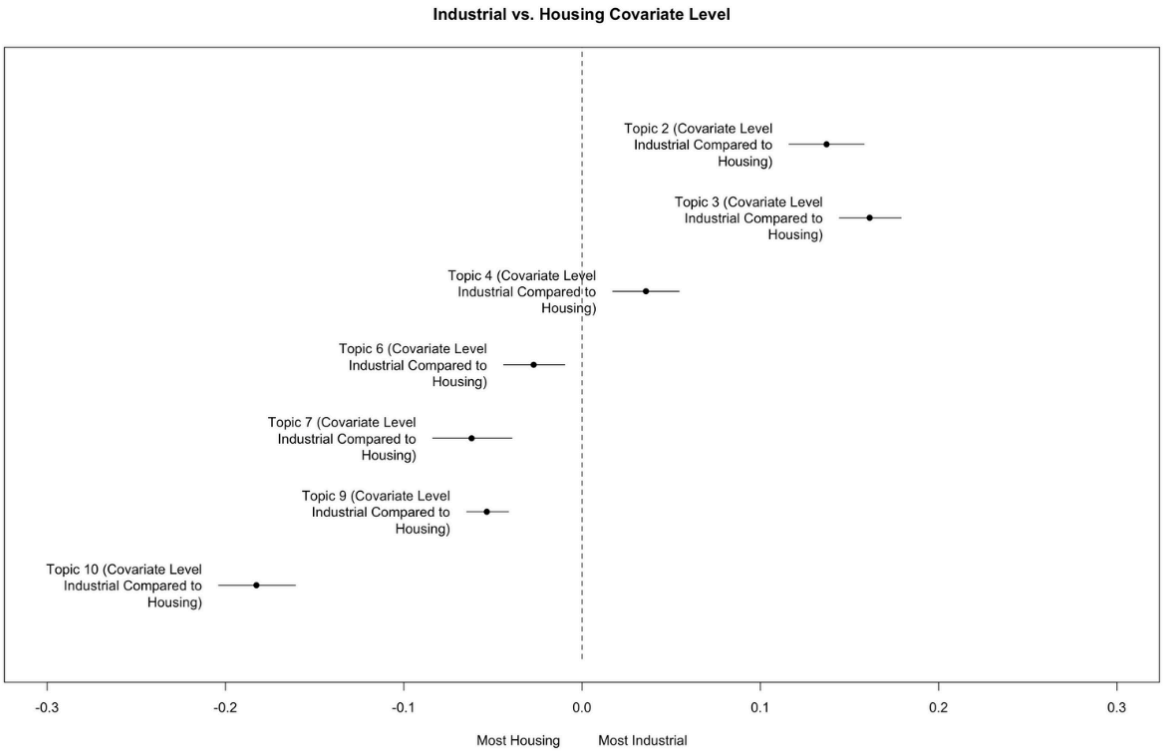


Figure 14: STM Industrial and Housing Covariate Difference

Industrial vs. Jobs and Economy

The following section applies a joint STM model for documents classified as industrial and jobs/economy to determine the differences in topic proportions and prevalence between the two. Figure 15 presents the topic proportions and the 10 most associated words for each topic considering the context of the words. The top three topics include words such as “approve”, “project”, and “develop”, again implying that the IE is discussing and approving the development of new proposals at a high rate. Using the estimateEffect function to plot the covariate (document label) relationship to the topics (Figure 16). Topic 2, 5, and 9 are statistically (95% confidence interval) more associated with industrial documents, while topics 3, 4, and 10 are statistically more related to jobs and economy documents.

Topic 9 is the most associated with industrial documents, and topic 3 is most related to jobs and economy documents. To determine how these topics differ, I plot the two topics (Appendix E), which calculates the difference in probability of a word across the two topics. When discussing warehousing, IE

representatives are more likely to use words such as “develop”, “zone”, and “project”. In jobs and economy documents, IE council members are more likely to mention “staff”, “agreement”, and “service”. These results, to an extent, support H2 as warehousing documents are most related to words and themes surrounding building and development. However, jobs and the economy labeled documents do not place an emphasis on improving the local economy.

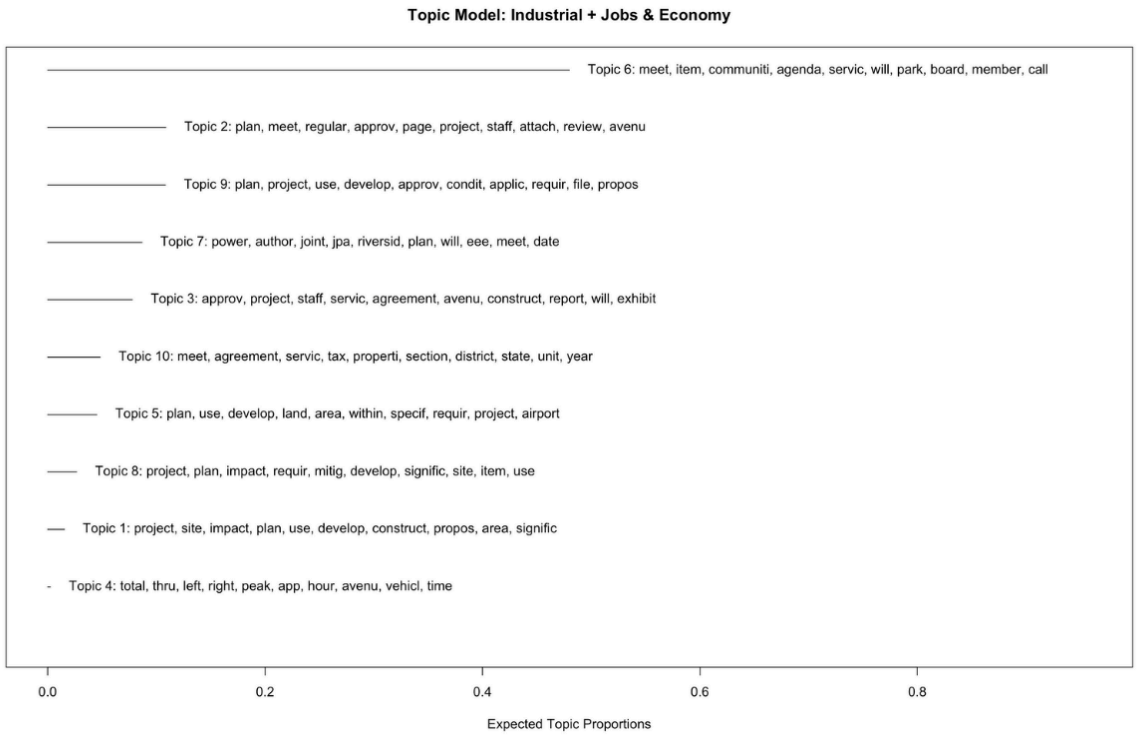


Figure 15: STM Industrial and Jobs/Economy

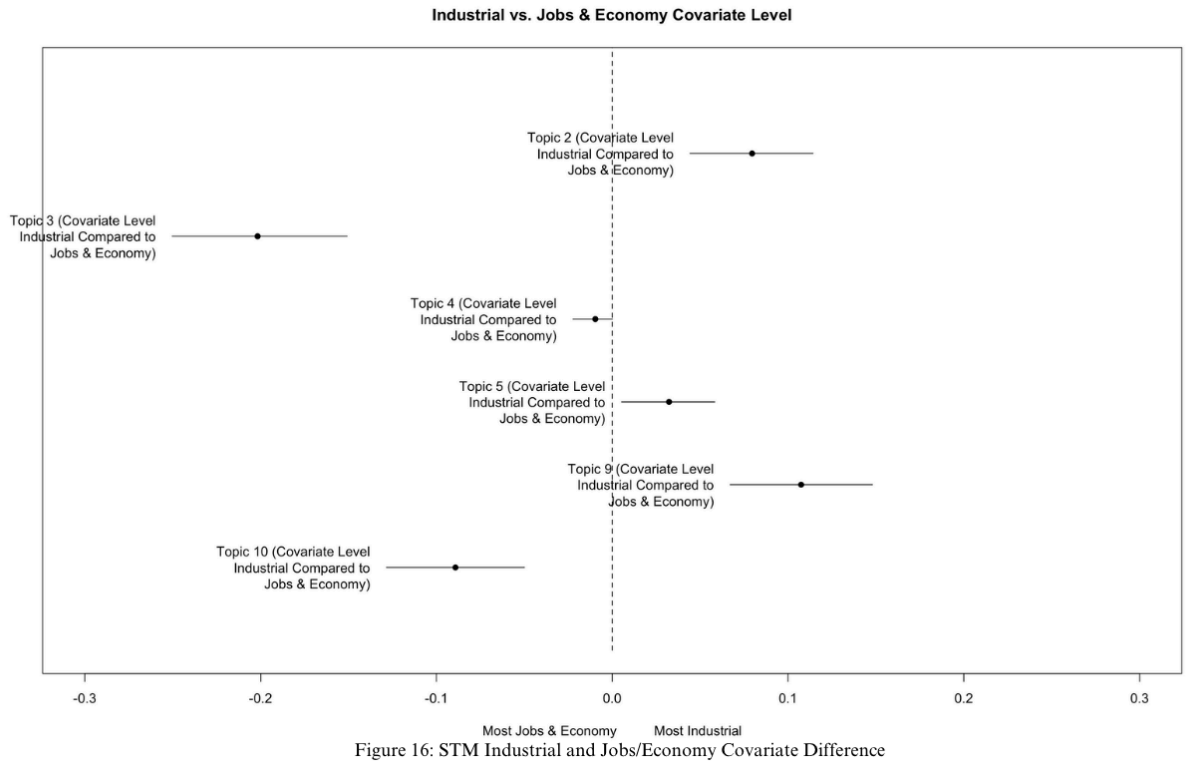


Figure 16: STM Industrial and Jobs/Economy Covariate Difference

Industrial vs. Public Safety

When contrasting documents classified as industrial and public safety, the top three topics include words such as “approve”, “service”, and “community” (Figure 17). Unlike the other models, these results suggest more discussions on approving services that tackle public concerns. Using the estimateEffect function to plot the covariate (document type) relationship to the topics (Figure 18). Topic 1, 2, 3, 4, 6, and 9 are statistically (95% confidence interval) more associated with industrial documents, while topics 7, 8, and 10 are statistically more related to public safety documents.

Topic 4 is the most associated with industrial documents, and topic 7 is most related to public safety documents. To determine how these topics differ, I plot the two topics (Appendix F), which calculates the difference in probability of a word across the two topics. When discussing warehousing, IE representatives are more likely to use words such as “plan” and “request”. In public safety documents, IE council members are more likely to mention “improve” and “service”. Unlike the other models, there is

more overlap in word usage between these two topics (along the dotted line) with words such as “approve” and “develop” being used between both. Overall, these results lend support to H2, as there are more topics related to warehousing that surround the discussion and approval of new projects and proposals compared to public safety documents.

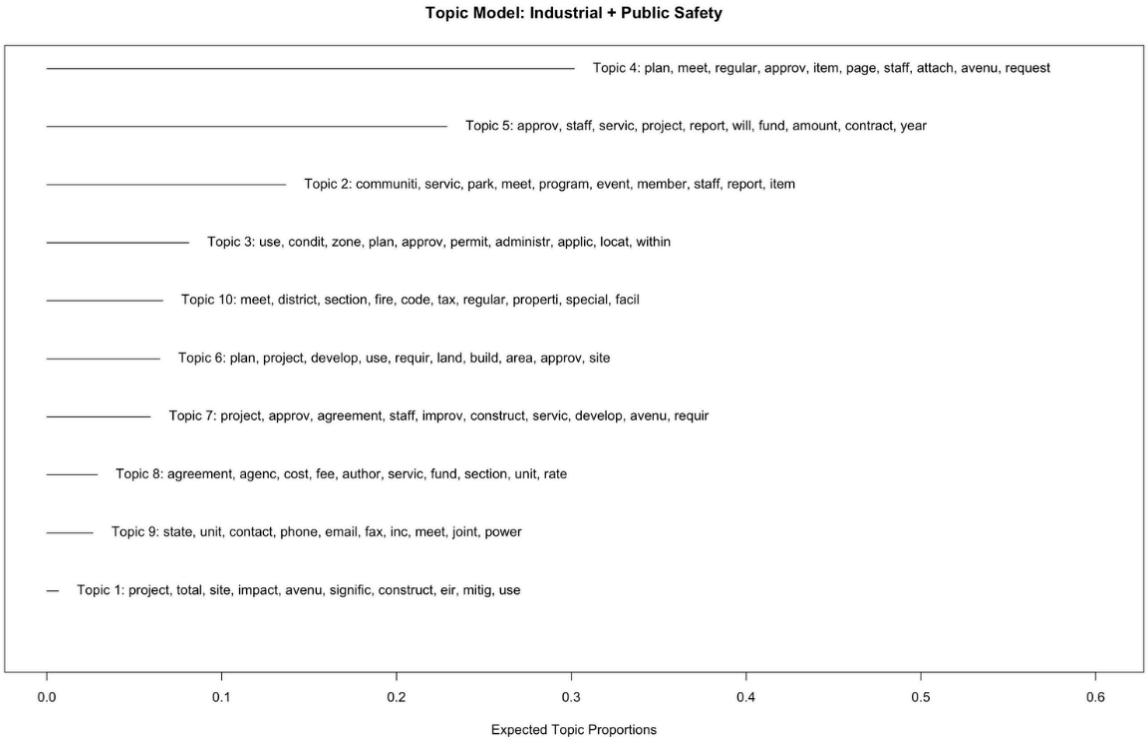


Figure 17: STM Industrial and Public Safety

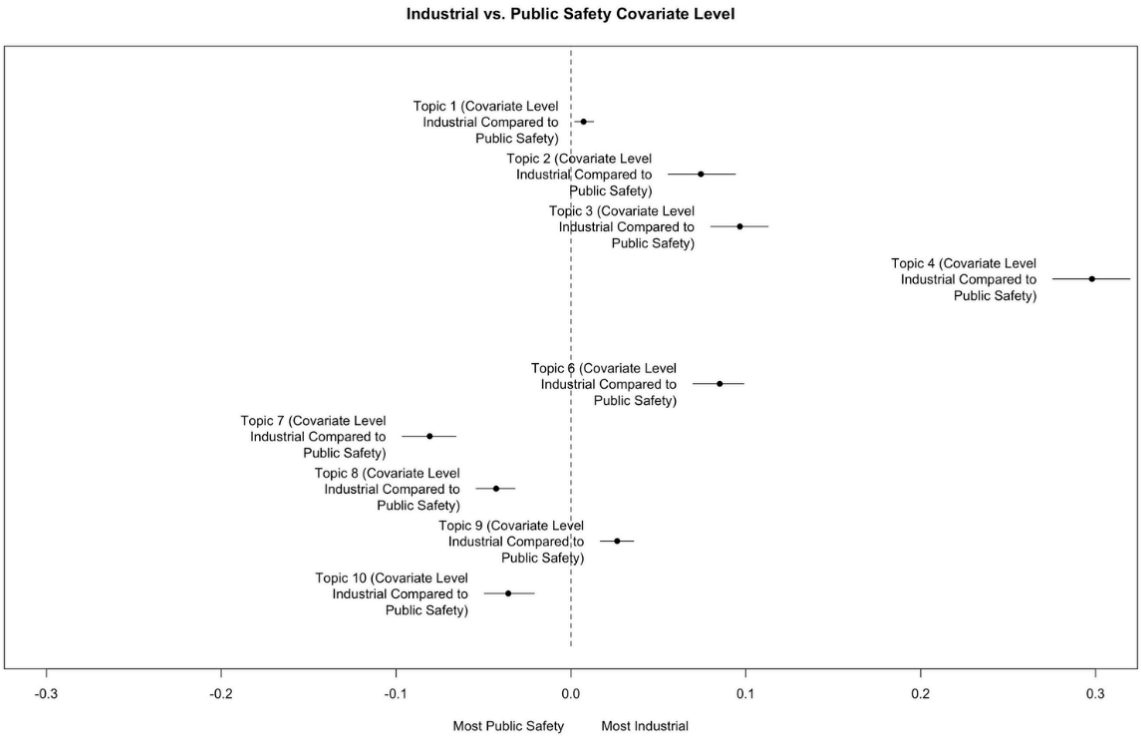


Figure 18: STM Industrial and Public Safety Covariate Difference

Chapter 4: Discussion and Conclusion

4.1 Discussion

The goal of my research was to explore two overarching questions: 1) How have local elected officials in the IE facilitated the growth of industrial warehouses? 2) Do local governments in the IE prioritize warehousing developments over rent control and reducing crime? As discussed in Chapter 1, there is a plethora of research understanding the health and environmental impacts of high and long exposure to ozone and PM 2.5 as well as the broader role that local governments have. What is lacking, and the gap I intended to address with my research, is a deeper understanding of what conversations take place at the local level to facilitate or hinder the expansion of industrial practices that result in adverse health and environmental risks. I do so by conducting textual analysis of city council meeting agendas for the 5 cities/regions with the highest concentration of warehouses in the IE (Figure 2). Despite the harmful health and environmental impact of industrial warehouses, I find that IE local governments spend a significant amount of time discussing (H1) and approving (H2) more warehouses. My research lends support to my hypotheses that the amount of discussion dedicated to the approval of new warehouses in city council meetings are far greater than the amount of discussion focused on the approval of new housing, creating jobs and improving the economy, and strengthening public safety. I also find support for my second hypothesis, which expects that the semantic relationships in which warehouses are discussed versus housing, jobs and the economy, and public safety differ significantly.

Applying a LDA model to my data consisting of city council meeting agendas, H1 is supported, as I derive that 31.8% of all tokens in the data are most related to a topic that is thematically associated with warehousing (Figure 10). While new housing and jobs/economy are among the top 3 topics that best represent the corpus, industrial language is the most prevalent. Such findings support my overarching research questions that local elected officials actively work to facilitate the expansion of

warehouses and discuss it more than other issues that their constituents are most concerned about (housing, jobs/economy, and public safety). These results indicate that approving new proposals for warehouses is a top priority for local governments in the IE, and over time (Figure 9), a significant portion of meetings has been dedicated to discussing this.

Finally, I applied STM to analyze the aggregate data (which consists of the 5 cities/ regions) to determine whether there is support for my second hypothesis. I find that when comparing industrial labeled documents to housing documents, there is no variation in the semantic content. In other words, local governments discuss both issues in relation to approving and building more of these infrastructures (Figure 14). However, when contrasting industrial labeled documents to jobs/economy and public safety documents, I do find a clear semantic difference that points to warehousing being an issue that is discussed in the context of further development and construction. Given that the STM derives topics based on the co-occurence and frequency of words; if words that would be grouped together appear at a low frequency, the model will not detect their relationships. As a result, even if jobs/economy and public safety are discussed in the context of improving these issues or approving proposals to address them, it is not done so enough to be statistically significant. Overall, these results support my hypothesis that the language and context used when discussing warehousing differs from discussions on other issues.

4.2 Research Implications

These findings shed some insights on the issue prioritized by local governments in the IE, as over the past two decades, conversation surrounding the approval and discussion of industrial spaces surpases conversations over issues their constituents find most pressing. Across the IE, there are various ongoing and pending plans to continue expanding warehouse and industrial facilities. Despite efforts from local politicians and community leaders, city and state officials have demonstrated minimal efforts

to enact stricter warehouse regulations and limitations in the IE. In late January 2023, over sixty organizations authored an 80 page report declaring a Public Health State of Emergency in the IE, urging Governor Gavin Newsom to impose a 1-2 year moratorium to assess the health and environmental impact of warehousing, and implement the necessary policy changes.[50] As of March 2025, there has been no response from Newsom or his office. This lack of responsiveness seems to signify what local and state officials in California and the IE prioritize, which is economic growth above health and environmental protections.

In 2024, Governor Gavin Newsom signed Assembly Bill 98[51] into law , which imposes new restrictions and standards for logistics centers across the state. AB 98 sets a minimum setback of 300-500 sq ft from warehouses to sensitive areas (homes, schools, daycare, etc.). However, as described in the letter above, 1,000 sq ft is recommended to limit the most harmful diesel exposure. Additionally, Southern California currently adheres to the "Warehouse Indirect Source Rule"[52], requiring warehouses to implement zero-emission operations to minimize the environmental impact of semi-trucks. Given that this rule only applies to warehouses that are over 100,000 sq ft, failing to consider the dozens of warehouses less than that minimum who are densely clustered in warehouse mega-centers.

While there have been efforts to mitigate the impact of warehouses within the IE and across the state, there is an urgent need for bolder and stricter regulations. As such, I agree with the authors of the letter to Governor Gavin Newsom, that the IE must impose a 1-2 year warehouse moratorium to update zoning and development laws to include buffer zones greater than 1,000 feet between warehouses and sensitive receptors to minimize the health impacts of PM10 and PM2.5 associated with diesel engines. Additionally, CARB and the South Coast Air Quality Management District need to identify warehouse epicenters and all warehouses near sensitive receptors and apply the "Warehouse Indirect Source Rule" to warehouses under 100,000 sq ft to transition to zero-emission transportation.

[50] Letter to Gavin Newsom. https://calmatters.org/wp-content/uploads/2022/06/State-of-Emergency-Public-Health-Request.pdf.
[51] Summary of AB 98. https://www.rutan.com/summary-of-ab-98-proposed-significant-restrictions-on-new-logistics-uses/.
[52] California Air Resources Board. https://ww2.arb.ca.gov/sites/default/files/classic/technology-clearinghouse/rules/RuleID4736sr.pdf.

It is critical to note that in both LDA and STM results, there are only 3 words (“ceqa”, “air”, “emission”) that can be assumed to relate to environmental concern from IE elected officials. This limited presence of themes relating to the concern of environmental and health impacts faced by their constituents signals a disservice and disregard for the crisis in the region. As visualized in Appendix G and H, areas with high concentrations of warehouses have high levels of PM 2.5 and diesel matter, both which are extremely harmful to the environment and people’s health. The lack of emphasis on the environmental and health challenges faced by IE residents signals the need for additional research to further understand this ongoing crisis.

4.3 Next Steps and Further Research

In my future research endeavors, I would like to expand this study to explore political engagement and voter participation in the IE. In doing so, I would be able to gain a deeper understanding as to why mayors and city council members who support proposals that harm its people and environment continue to be elected. As presented in Table 1, IE mayors are not representative of the political ideology of registered voters. Despite this, many of these mayors have been in office for many years and even decades. Additional research on political behavior and attitudes can provide key metrics as to why voter turnout and engagement at the local level is so low in the IE, as well as recommendations to increase engagement in areas that are most impacted by warehousing.

4.3 Limitations

As with all research studies, this research is subject to several limitations that should be considered when interpreting these results. First, my research seeks to understand conversations taking place at the local level to facilitate warehouse growth in the IE. Data at the local level is scarce, which is why I scraped council meeting agendas and meetings which, at the time, was the only publicly available

textual data on local government conversations. While this data provides details on what is going on and what was discussed within a given meeting, it does not capture the conversations that took place within this meeting. These agendas are not transcripts, rather bullet points and summaries of the meeting. As such, there is additional contextual information missing that could potentially better capture attitudes and efforts taking place at the local level. However, since this is the information that local governments willingly choose to share with the public, it still serves as a useful metric to determine what they value and work towards in their meetings.

Second, web scraping is an imperfect data collection method that does not always fully translate data from its original format to a csv. For example, some of the agendas were in a pdf or png format, whose text was then read using tools in R. Different factors, such as the lighting, text size, color, etc., can make it difficult for these programs to properly read and extract the text. This may result in data loss or words not being translated accurately. However, given the size of the data and the abundance of tokens due to some agenda being hundreds of pages, some data loss or misreading does not severely impact the analysis.

Third, LDA and STM analysis provide an overview of the corpus through the creation of topics that describe the text. The interpretation of these topics is my left to my own understanding and assumptions of what these words mean in relation to one another. Thus, my conclusions are subject to interpretation and can carry my own biases.

Appendix

Appendix A

LDA sample model in Python:

```
# Load dictionary
dictionary_industrial = corpora.Dictionary(industrial['Processed_Text'])
dictionary_industrial.filter_extremes(no_below = 2)

# Generate corpus as Bag of Words (BoW)
corpus_industrial = [dictionary_industrial.doc2bow(i) for i in   industrial['Processed_Text']]

# Train LDA Model
Lda_model_industrial = LdaModel(corpus = corpus_industrial, id2word = dictionary_industrial, random_state =
4583, chunksize = 20, num_topics = 5, passes = 200, iterations = 400)
```

Appendix B

STM sample model in R:

```
# Textprocessor automatically does preprocessing
temp1 <- textProcessor(documents = industrial_housing$Clean_Text,
                       metadata = industrial_housing,
                      customstopwords = remove)
# prepDocuments removes words/docs that are now empty after preprocessing
out1 <- prepDocuments(temp1$documents,
            temp1$vocab,
            temp1$meta)
```

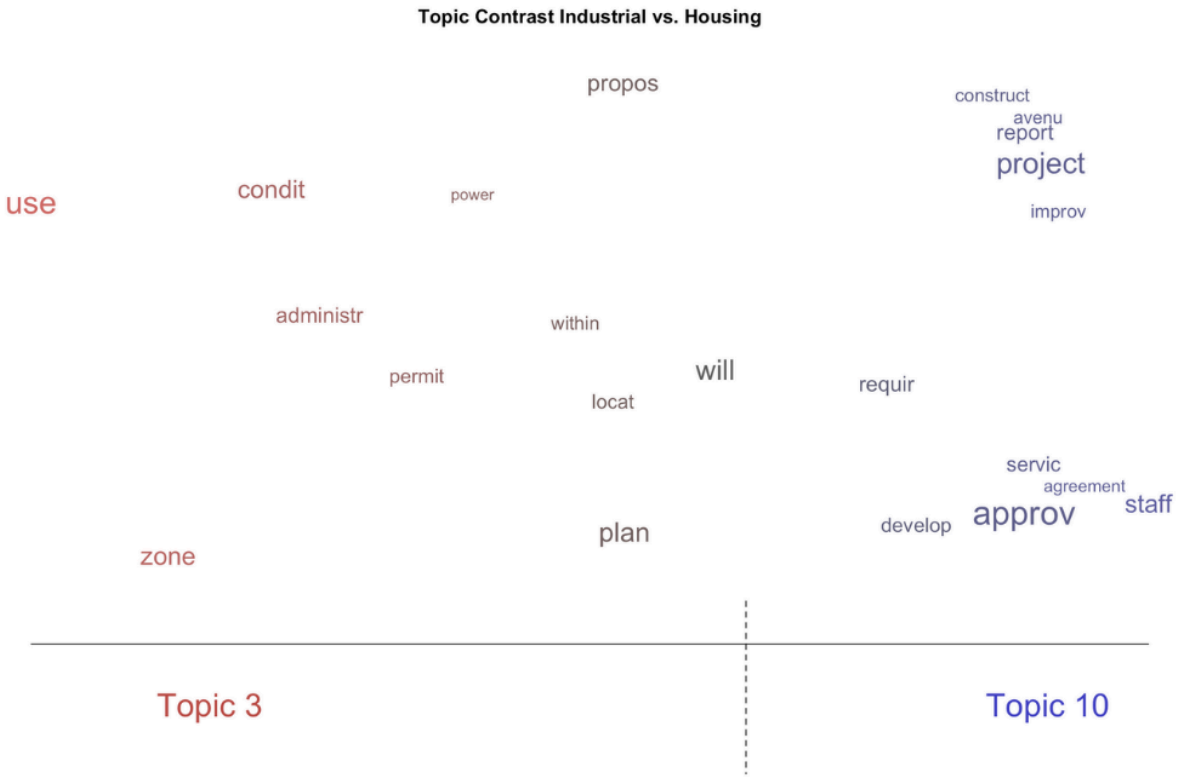
```
# Train STM

model1 <- stm(out1$documents, out1$vocab, K = 10,

              prevalence = ~Type, data = out1$meta)
```

Appendix C

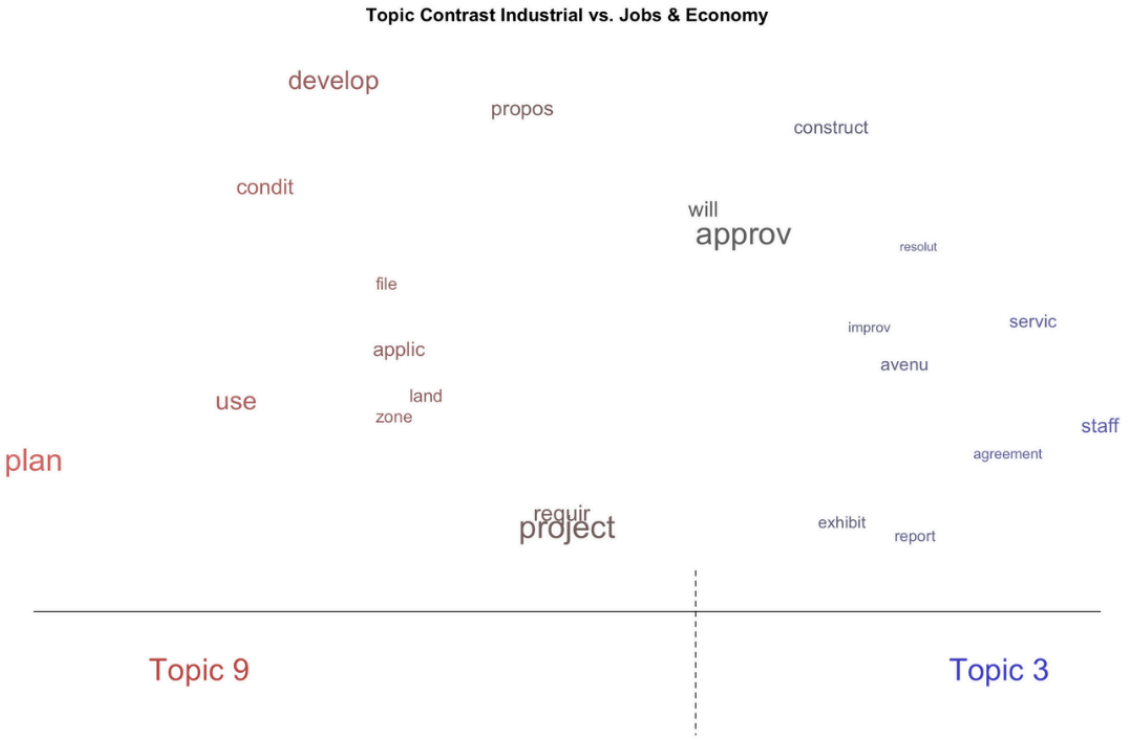
Top 5 words for topics 4-6 of LDA model.

- Topic 4 (11.6% of tokens): [“administrator”, “low”, “tab”, “commissioner”, “oral”]
- Topic 5 (3.1% of tokens): [“level”, “delay”, “develop”, “system”, “approach”]
- Topic 6 (1.9% of tokens): [“ont”, “yes”, “flow”, “arena”, “gage”]

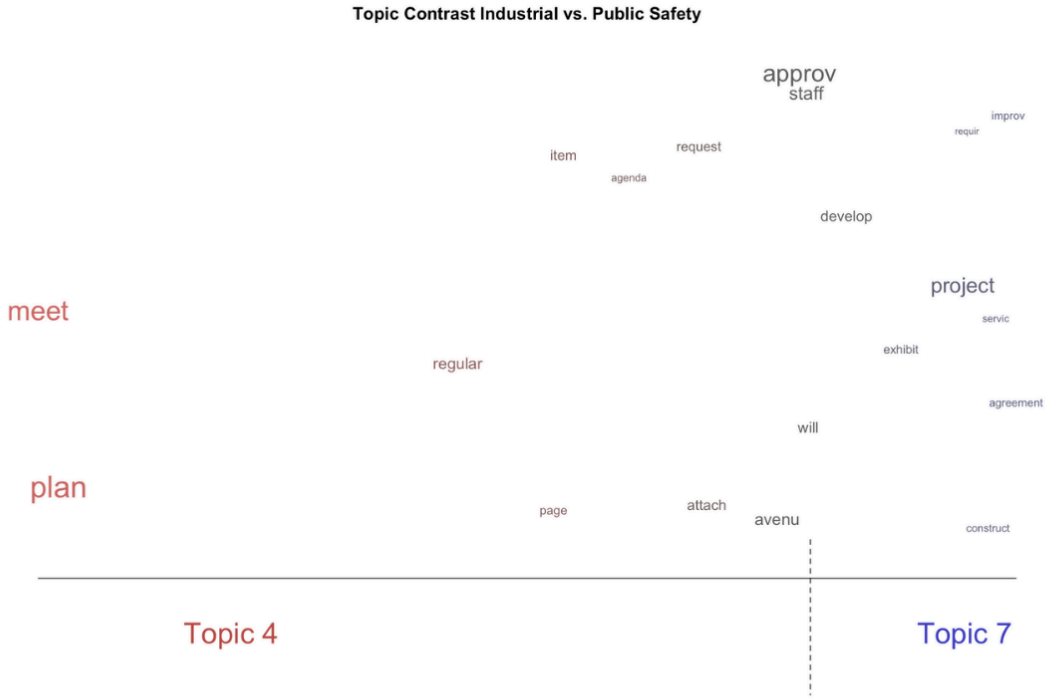
Appendix D



Appendix E

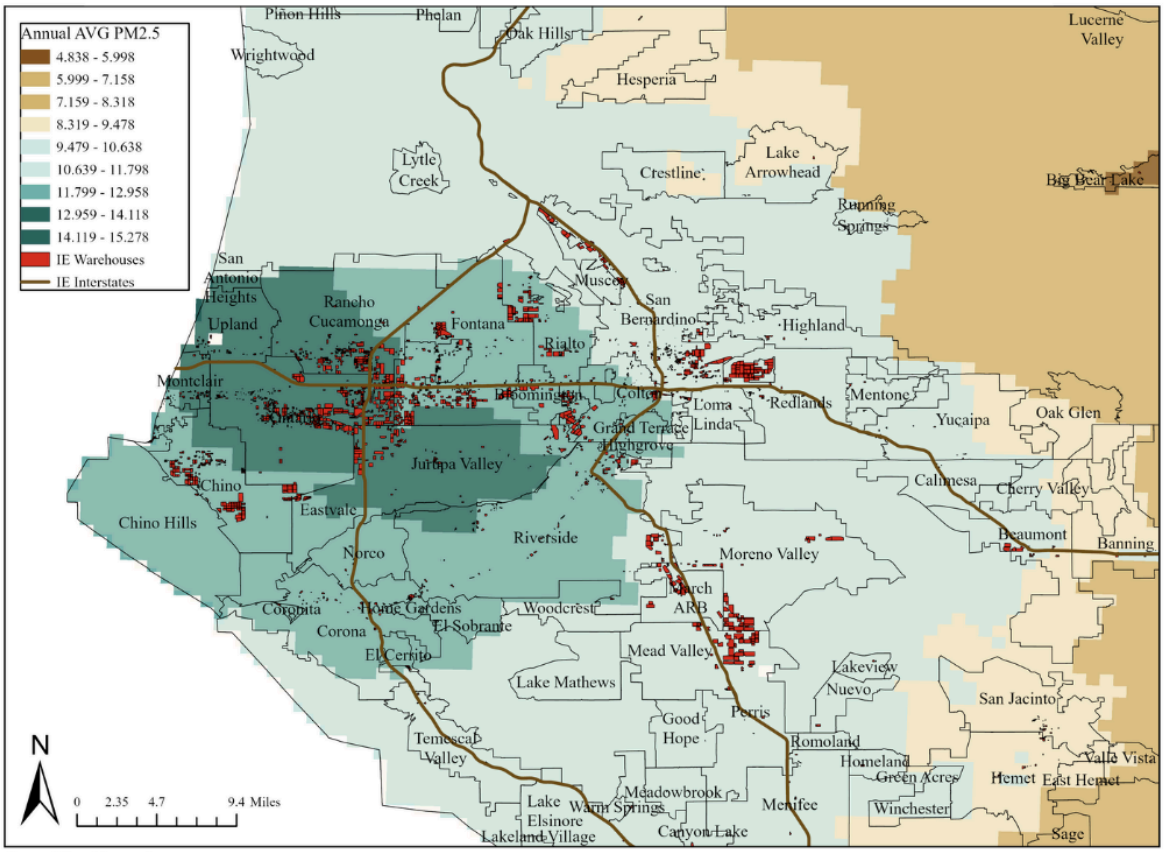


Appendix F



Appendix G

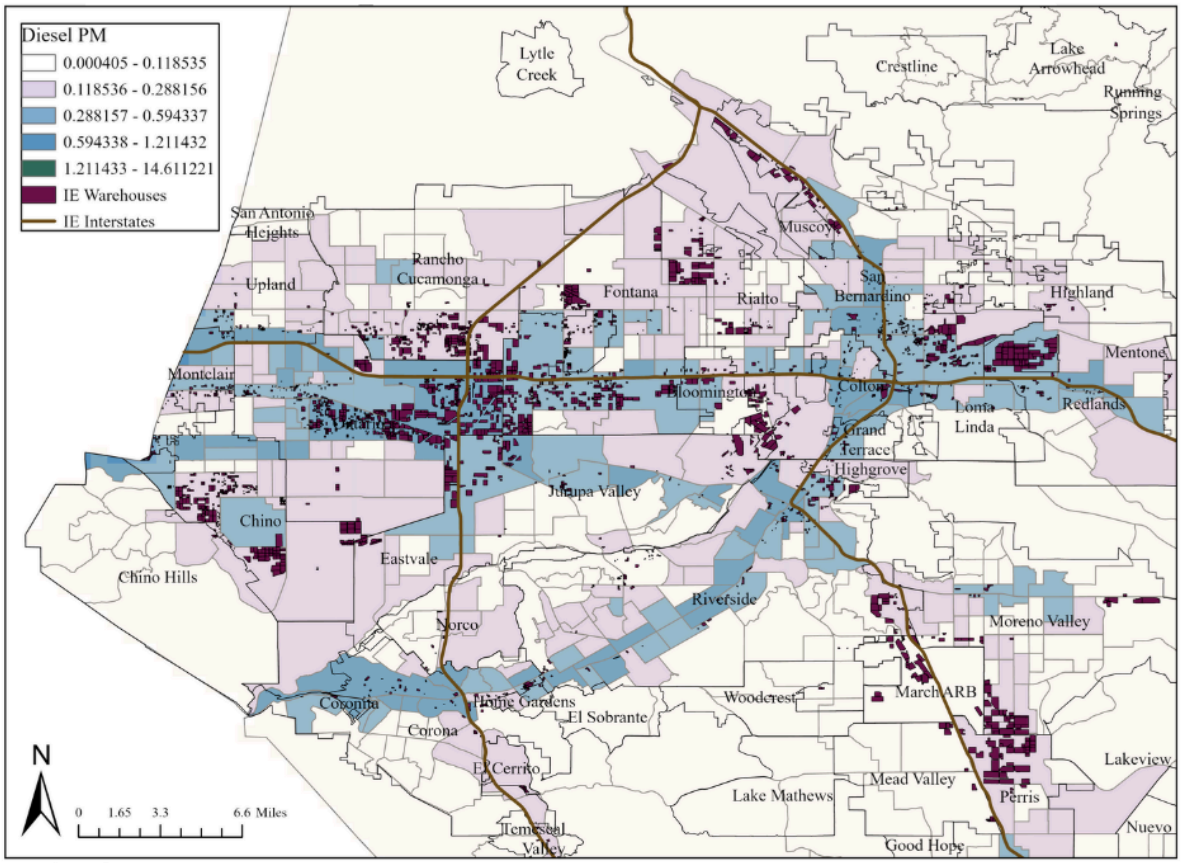
IE PM 2.5 and Warehouses



Created By: Alyson Otañez
Sources: U.S. Census Tiger Files County & Places.
Pitzer College IE Warehouses. California OEHHA.

Appendix H

IE Diesel PM and Warehouses



Created By: Alyson Otañez
Sources: U.S. Census Tiger Files County & Places. Pitzer College IE Warehouses.California OEHHA.

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