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# Logistics Sprawl: Differential Warehousing Development Patterns in Los Angeles, California, and Seattle, Washington

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1 **Logistics Sprawl: Differential Warehousing Development Patterns in Los Angeles and Seattle**

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36 **ABSTRACT**

37 The warehousing industry experienced a period of rapid growth from 1998 to 2009. This paper compares  
38 how the geographic distribution of warehouses changed in both the Los Angeles and Seattle Metropolitan  
39 Areas over that time period. These two west coast cities were chosen due to their geographic spread and  
40 proximity to major ports as well as their difference in size. The phenomenon of logistics sprawl, or the  
41 movement of logistics facilities away from urban centers, which has been demonstrated in past research  
42 for the Atlanta and Paris regions, is examined for these two areas. The weighted geometric center of  
43 warehousing establishments was calculated for both areas for both years, along with the change in the  
44 average distance of warehouses to that center, an indicator of sprawl. We find that between 1998 and  
45 2009, warehousing in Los Angeles sprawled considerably, with the average distance increasing from  
46 25.91 to 31.96 miles, an increase of over 6 miles. However in Seattle, the region remained relatively  
47 stable, showing a slight decrease in average distance from the geographic center. Possible explanations  
48 for this difference are discussed.

49

50 **INTRODUCTION**

51  
52 Starting in the 1990s the logistics industry began experiencing rapid growth. This was reflected by  
53 warehousing specifically, which for the purposes of this paper is defined as any industry falling under  
54 North American Industry Classification System (NAICS) Code 493 6 Warehousing and Storage. This  
55 includes general, refrigerated, farm product, and other warehousing and storage. (Code 493 has kept the  
56 same definition over our study period, eliminating possible bias in comparing different years). Across the  
57 United States, employment in the warehousing industry increased by almost 400% between 1998 and  
58 2006 at a compound annual growth rate of 22.25%, compared to total U.S. employment which grew by  
59 1.3% annually (1). The number of warehousing establishments more than doubled from 6,712 in 1998 to  
60 over 14,000 by 2008 (2). The trend continued until the recession, at which point the growth in the  
61 warehousing industry began to slow. The number of warehousing establishments increased every year  
62 through 2007, at which point there was a 1% decrease in establishments in 2008. From 2008 to 2011 the  
63 number of establishments decreased at an average of 0.4% per year. Similarly the number of  
64 warehousing employees increased every year through 2008, at which point there was a 4% decrease in  
65 warehousing employment by 2009, and a further 3% decrease in 2010, before increasing less than a  
66 percent in 2011 (3). This paper will compare the locations of warehouses in two major population centers  
67 on the west coast of Los Angeles and Seattle, during the growth period. These two cities can be compared  
68 to Atlanta, for which a similar analysis was completed in Dabanc and Ross (2012) (4).

69 Specifically, this paper will focus on a phenomenon known as logistics sprawl, which is the  
70 tendency of warehouses to move away from urban regions toward more suburban and exurban areas (4).  
71 Dabanc and Ross show this phenomenon to be occurring in the Atlanta area, which has a metropolitan  
72 population of approximately 5.5 million people (5).

73 The Seattle area studied is smaller than Atlanta's, with a population of 3.5 million, while the  
74 Greater Los Angeles area is much larger at approximately 18 million (5). Both Seattle and Los Angeles  
75 are located next to the Pacific Ocean, and house major intermodal terminals, including the 1<sup>st</sup> and 3<sup>rd</sup>  
76 largest container terminal complexes in the United States, respectively. This creates demand for  
77 warehouses in the nearby area. Geographic features such as the Pacific and mountain ranges constrain  
78 both regions geographically (but in diverse ways), influencing urban expansion patterns.

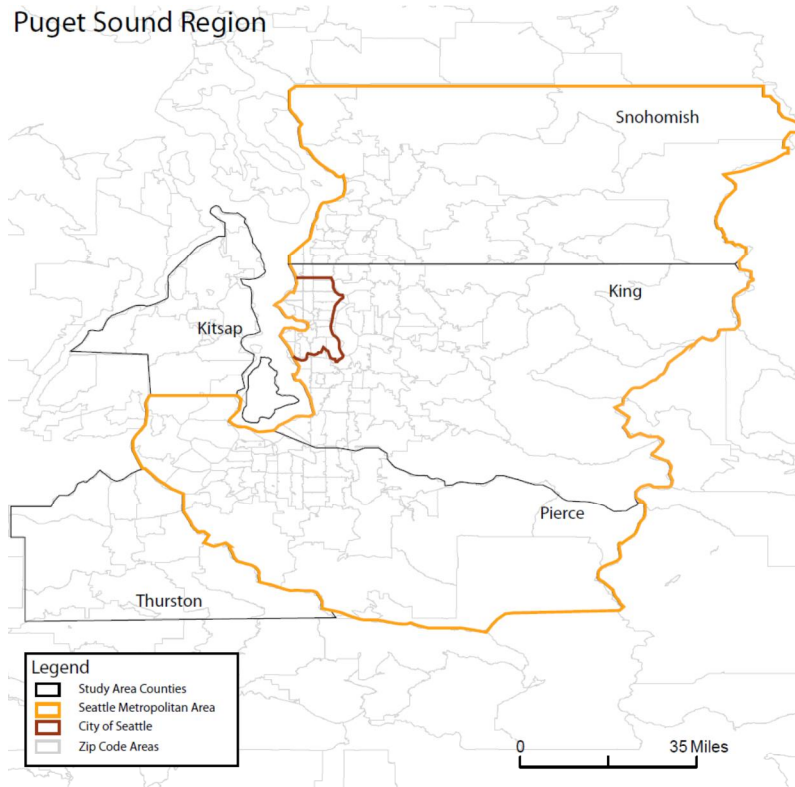
79 The LA area used in this study (commonly referred to as the Greater Los Angeles area) includes  
80 Ventura, Los Angeles, Orange, San Bernardino, and Riverside counties, shown in **Figure 1**. Los Angeles  
81 is bordered to the southwest by the Pacific Ocean, and is separated from much of northern LA and San  
82 Bernardino counties by the San Gabriel Mountains to the north. There are also several smaller mountain  
83 ranges in the area, recent expansion of both population and industry has been largely to the east.



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**FIGURE 1 Los Angeles study area.**

88 The Seattle-area counties studied were King, Snohomish, Pierce, Kitsap, and Thurston, stretching  
89 from Everett in the north to Olympia in the south, shown in **Figure 2**. The Puget Sound provides a  
90 geographic barrier to the west, and the Cascade Mountains border the east side of the urban region. There  
91 are a few residential and industrial areas to the west of the Sound, but most of the population and  
92 businesses are to its east. Transportation across the Sound is difficult as there is only one road crossing  
93 the body of water in the southern end and all other travel must be made by ferry. The vast majority of the  
94 population lives to the east of the water.



95  
96 **FIGURE 1 Seattle study area (Source: U.S. Census Bureau).**  
97

98 The Los Angeles Metropolitan Area economy grew from approximately \$578 billion in real gross  
99 domestic product (GDP) in 2001 to \$653 billion in 2009, a total growth of approximately 13% (6). The  
100 highest yearly GDP during that time period was \$692 billion in 2008, which decreased by 5.6% in 2009.  
101 Major sectors in the Los Angeles economy include manufacturing, trade, and banking and finance.  
102 Transportation and warehousing comprise about 2.4% of total GDP (6).

103 The Seattle Metropolitan Area economy grew from approximately \$173 billion real GDP in 2001  
104 to \$204 billion by 2009, a growth of approximately 18% (6). The highest yearly GDP during that time  
105 period was \$211 million in 2008, which decreased by 3.3% in 2009. Major sectors include aerospace,  
106 information technology, trade, and tourism (7). Transportation and warehousing comprise about 2.9% of  
107 total GDP (6).

108 Trade is a major industry in both metropolitan areas. Transportation and warehousing make up a  
109 similar percentage of total GDP in both areas (2.4 and 2.9%). Most sectors in both regions experienced  
110 moderate growth until 2008 before declining due to the recession. However the Los Angeles  
111 Metropolitan Area experienced a greater percentage decline in GDP from 2008 to 2009.  
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## 113 **LITERATURE REVIEW**

114

115 Sivitadinou (1996) made one of the first empirical studies of the location of warehouses in a U.S.  
116 metropolitan area (Los Angeles) and examined its links with land prices (8), but her efforts were not  
117 followed by many others. Urban economists have traditionally focused on the labor decisions of firms  
118 and households to try and account for various aspects of urban form. The location and transportation  
119 decisions made by the various entities in the supply chain as these parties manage logistics costs have  
120 received considerably less attention (9), while they have become increasingly more important, especially  
121 in metropolitan areas. The warehousing industry has undergone major restructuring, transforming it into a  
122 distribution industry serving major importers and big box retailers (10, 11), based on direct access to

123 consumption markets, globalized networks of goods distribution, hub and spoke networks and just-in-  
124 time operations. This has led to a rise in hub distribution centers (12). Very large distribution centers, or  
125 òmega DCsö (1) have driven the early growth in warehousing establishments in metropolitan areas in the  
126 study period. Between 1998 and 2005, the number of distribution centers with more than 100 employees  
127 increased twice as fast as smaller facilities (1). Today's supply chains require a lot of logistics facilities,  
128 and the efficiency of goods distribution depends upon the optimal location and sizing of freight terminals.  
129 Freight transportation costs have decreased dramatically over the last thirty years (13). Low freight costs  
130 create an òincreased locational flexibilityö (14) for freight and logistics facilities. The opportunity for  
131 good regional and national networking between facilities within a supply chain is a key factor (15).  
132 Finally, some warehousing activities which were previously performed as part of a manufacturing or  
133 distribution activity (and on the same premises), have been outsourced to logistics providers,  
134 automatically increasing the number of warehouses. In some cases manufacturers have implemented a  
135 specific warehousing/logistics facility when previously logistics functions (which required less space)  
136 were performed within the manufacturing facility itself (see the example of Vernon, in Southern  
137 California, presented in [16]). As noted by Hall and Hesse (2013), metropolitan areas retain logistics  
138 facilities because they have a sort of òfreight advantageö that includes òlabour, skills, infrastructure,  
139 technologyö among others (17).

140 The new distribution centers required by the current organization of supply chains and a  
141 consumer-based economy are directly responsible for logistics sprawl, i.e. the tendency for warehouses to  
142 move from urban to suburban and exurban areas (4). Historically, warehouses and freight terminals have  
143 tended to be close to city centers and rail stations. Today, they need more space and are located as close  
144 as possible to highway networks and airports (18). Suburban areas are attractive because of the  
145 availability and low cost of land and also because of the availability of transportation infrastructure that  
146 connects to a more complex system of regional and national flows. This has an impact on urban  
147 landscapes by generating congestion, CO<sub>2</sub> emissions and local atmospheric pollution. These impacts are  
148 the result of additional vehicle-miles travelled (VMT) generated by the increase in distances travelled by  
149 trucks and vans to deliver commodities to urban areas where jobs and households remain concentrated.  
150 Dabanc and Rakotonarivo (2010) calculated that cross-dock terminals for parcel and express transport  
151 companies moved an average of 6 miles further away from the center of Paris between 1975 and 2008  
152 (19). During the same period, jobs in general moved only 1.3 miles, meaning that logistics sprawl is much  
153 more prevalent than the general sprawl of economic activities in metropolitan areas. They estimated the  
154 net increase in annual CO<sub>2</sub> emissions resulting from the relocation of facilities serving the Paris region to  
155 be 16,500 tonnes in 2008 compared with 1974.

156 The issue of logistics sprawl has recently generated some discussion among scholars, particularly  
157 economic geographers. Cidell (2010) has shown that in 47 of the 50 large metropolitan areas she  
158 surveyed, òdecentralizationö of freight activity had occurred over the last 20 years (1986-2005), as  
159 measured via Gini coefficients (20). Because data were processed at the county level, however, it was  
160 difficult to account for some of the relocation patterns, as central counties can be very widespread and  
161 changes in location within counties were not accounted for in Cidell's studies. Bowen (2008) confirms  
162 that logistics activities have experienced enormous, largely unnoticed, growth in recent years (15). He  
163 shows that the growth in warehousing was more marked in suburban counties than in central and rural  
164 counties: central city Metropolitan Statistical Area (MSA) counties saw warehousing establishments grow  
165 at an annual growth rate of 10.2%, while the increase for non-MSA counties and other MSA counties  
166 were respectively 9.3% and 11.8%. Hesse (2004), using two case studies from Germany, concludes that  
167 logistics activities favor distant locations for many reasons, some of which are specific to this industry  
168 while others apply to many economic sectors: overcoming congestion, planning requirements, or even the  
169 influence of unions (21). Looking at the Inland Empire in Southern California, De Lara (2013)  
170 emphasizes the role of temporary work availability and low-wage flexible workforce, demonstrating  
171 substantial wage differences in transportation and warehousing industries in L.A and Orange Counties  
172 compared with Riverside and San Bernardino Counties (22). These changes are embedded in a general  
173 transformation of the logistics real estate industry, increasingly dominated by global players organizing

174 large networks of distribution centers. Allen and Browne (2010) have found a tendency for warehousing  
175 to move away from urban areas to suburban areas in the United Kingdom and elsewhere in Europe. Land  
176 prices in Europe have been steadily increasing recently, so they theorize that this move has occurred  
177 partially due to cheaper land prices in suburban areas (23). The expansive roadway network in Europe  
178 allows companies to construct large warehouses in more centralized locations. In England specifically,  
179 they have found that warehousing districts are often strategically clustered along motorways close to, but  
180 just outside of large cities. While this is partly due to accessibility to the road network, it is also ða result  
181 of planning policy that encourages a concentration of such land useö (23). We will come back to land use  
182 policies in the discussion of this paper.

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## 184 DATA

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186 The research described in this paper was conducted using zip-code level establishment data. Data for all  
187 establishments for the years 1998 and 2009 were downloaded from the County Business Patterns website  
188 (<http://www.census.gov/econ/cbp/>). Structured query language (SQL) was used to isolate establishments  
189 under NAICS code 493 specifically, and to aggregate establishment totals within a given region. The  
190 final data sets were all zip codes in Ventura, Los Angeles, Orange, San Bernardino, and Riverside  
191 counties in California and King, Pierce, Snohomish, Kitsap, and Thurston in Washington. ArcGIS  
192 software was used to create maps of warehouse and establishment data. Additionally the barycenter, or  
193 weighted geographic mean, was calculated and plotted for each region for each year using standard  
194 ArcGIS procedures. These procedures are discussed further in the results section.

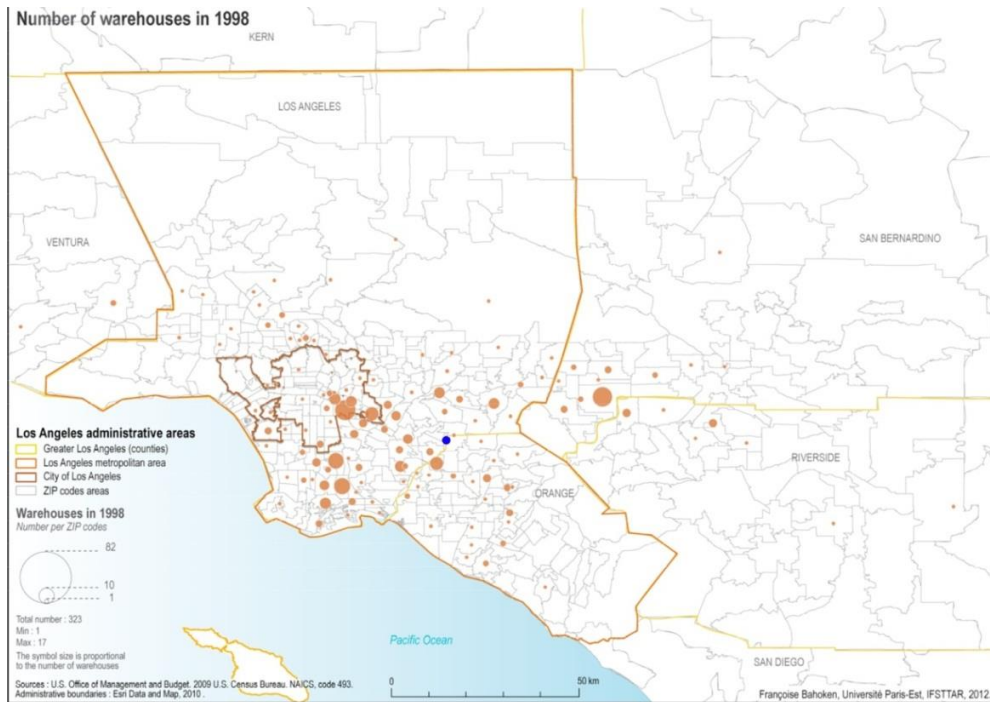
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## 196 LOS ANGELES RESULTS

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198 In 1998, the bulk of the warehousing establishments in the Los Angeles Metropolitan Area were located  
199 in Southern Los Angeles County and east and south-east of downtown. **Erreur ! Source du renvoi**  
200 **introuvable.** shows the locations of distribution centers in the Los Angeles study area in 1998, displayed  
201 by zip code. The only zip code outside of LA County with more than 10 establishments is 91761 in  
202 Ontario, CA, which has 16 facilities listed under NAICS code 493.

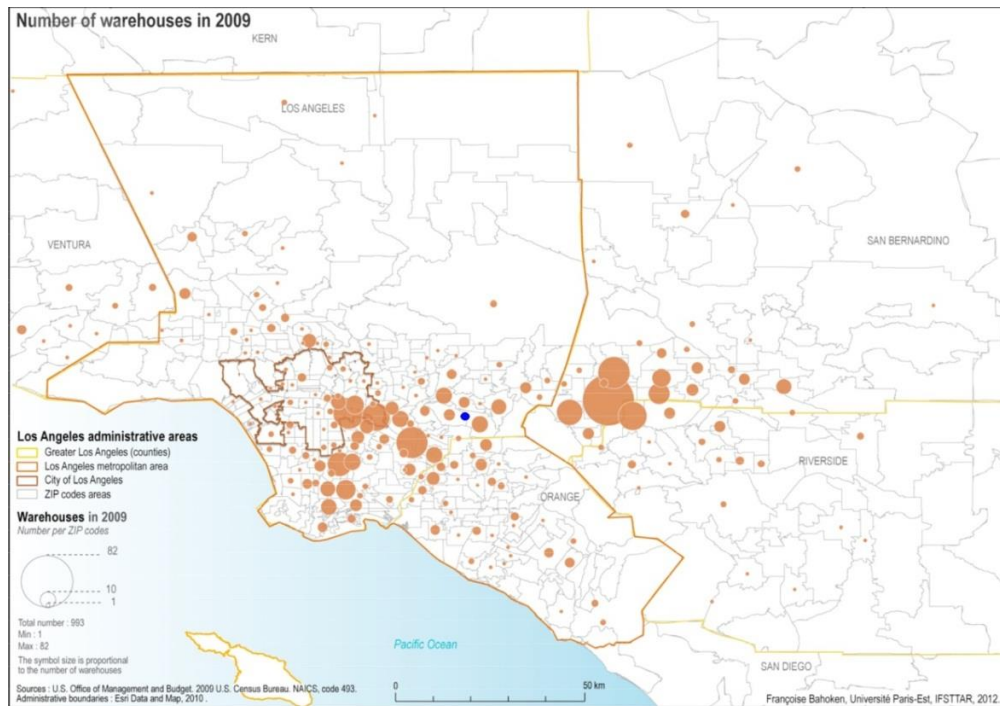




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**FIGURE 2 Los Angeles area warehousing, 1998. The weighted geographic center is indicated by a star.**

By 2009, the warehousing industry had undergone a significant expansion, as shown in **Erreur ! Source du renvoi introuvable.**, below. The total number of warehousing establishments increased substantially, and two distinct concentrations of warehouses appeared ó one near the city of Los Angeles, and one around Ontario and zip code 91761.



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**FIGURE 3 Los Angeles area warehousing, 2009. The weighted geographic center is indicated by a star.** There was moderate growth in both number of zip codes with warehousing establishments as well as total establishments within the city limits, shown in **Erreur ! Source du renvoi introuvable.** and **Erreur ! Source du renvoi introuvable..** Of zip codes with at least one establishment in 1998, 60 showed at least 100% increases in number of establishments. The number of establishments in Los Angeles County increased 134% from 220 in 1998 to 515 in 2009. Orange and Ventura counties experienced moderate growth. The most striking increase, however, appeared in western San Bernardino and Riverside counties, where in 1998 just one zip code had more than 10 establishments. As previously mentioned, this is centered around zip code 91761 in Ontario. The total establishments in San Bernardino County, for example, increased 641% from just 34 establishments in 1998 to 252 in 2009. Zip code 91761 increased from 16 establishments in 1998 to 82 in 2009. Several of the zip codes in the surrounding area also showed significant increases in number of establishments.

To quantify a potential shift in the location of warehousing establishments, a centrographic analysis of all establishments under NAICS code 493 was performed. The barycenter, or weighted geometric mean, of these was calculated for both years. The barycenter was weighted only by spatial distance; other warehouse characteristics, such as square footage or number of employees, were not included in the weighting. Then the distance from the barycenter to each establishment was calculated and averaged across all warehousing establishments. A similar analysis was done for all NAICS establishments. The findings can be summarized as follows:

- The average distance of warehousing establishments from their barycenter increased from 25.907 miles to 31.963 miles,
- but the average distance of all establishments from their barycenter remained stable, changing from 41.748 to 41.714 miles.

On the whole, there was very little change in distribution of all establishments, but warehousing has sprawled considerably. While establishments in the L.A. metropolitan area have not sprawled, warehouses have moved out an average of 6 miles. This suggests that within the L.A. metropolitan area, more truck miles are required to reach customers (for shipments or deliveries) in 2009 than was the case

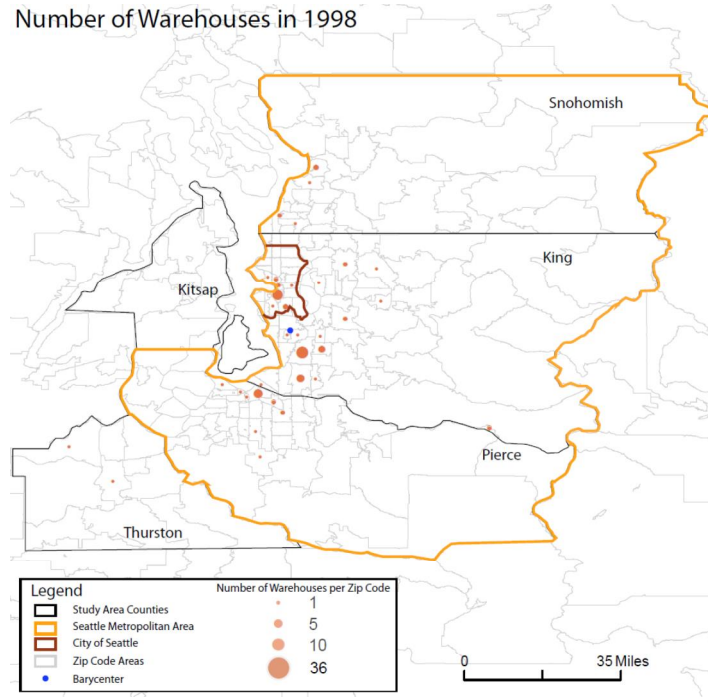
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240 in 1998. This is "relative sprawl," i.e. when logistics facilities move further away than the businesses they  
241 serve for pick-ups and deliveries.

242  
243 **SEATTLE RESULTS**

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245 In the Seattle area, the same sets of analyses were performed. The number of warehouses increased  
246 significantly within the study area, from 85 in 1998 to 212 in 2009, an increase of 149%. **Figures 5 and**  
247 **6** show the number of warehouses by zip code for these two years, respectively.

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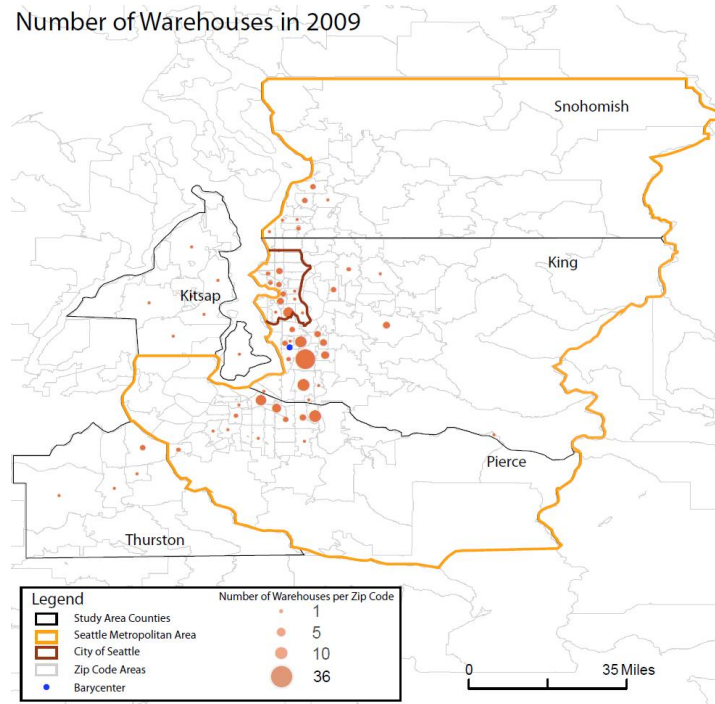
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251 **FIGURE 4** Seattle area warehousing, 1998 (Source: U.S. Census County Business Patterns).

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253 In 1998, zip code 98032 had the most establishments at 15, and zip code 98134 was the only  
254 other zip code with more than 7. There were 35 total zip codes with a warehousing establishment, and 85  
255 total establishments in the area. All but 5 zip codes had 3 or fewer warehouses. There was nothing to the  
256 west of the Puget Sound, and only two zip codes with establishments in the Olympia area. The barycenter  
257 was plotted as a star.



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**FIGURE 5 Seattle area warehousing, 2009 (Source: U.S. Census County Business Patterns).**

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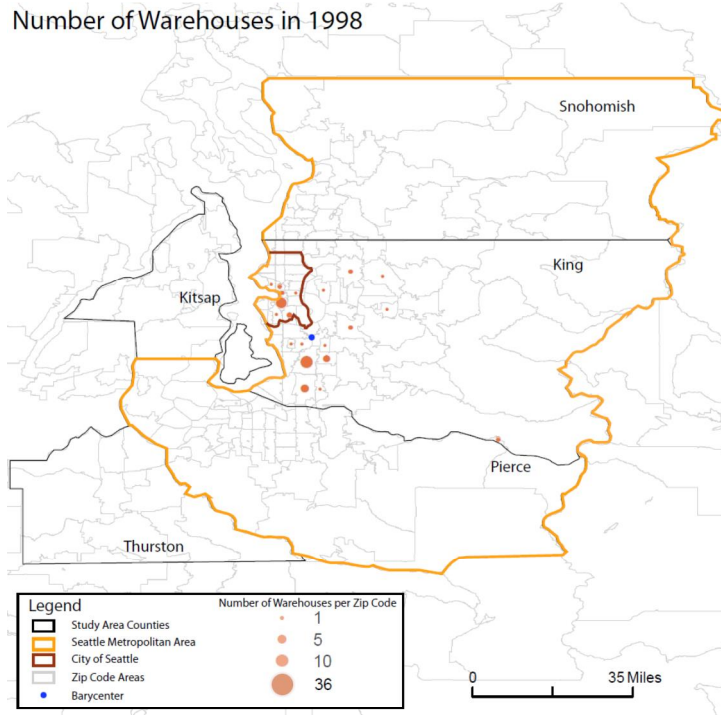
By 2009, however, the total number of establishments had increased to 212. The number of zip codes with at least one establishment increased 74% from 35 to 61. To the southwest, there are now 5 zip codes with establishments compared to two in 1998. Where there had previously been nothing to the west of the Puget Sound, there are now 7 zip codes with at least one warehouse. There are also more zip codes with more establishments to the north.

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The bulk of the new warehouses were built in the Kent/Renton area. Zip code 98032 had a 140% increase in number of warehouses, from 15 warehousing establishments in 1998 to 36 in 2009. There was a high concentration of warehouses near the barycenter in 1998, and additional warehouses were constructed in all of those zip codes by 2009. The barycenter shifted 2.27 miles to the southwest between 1998 and 2009.

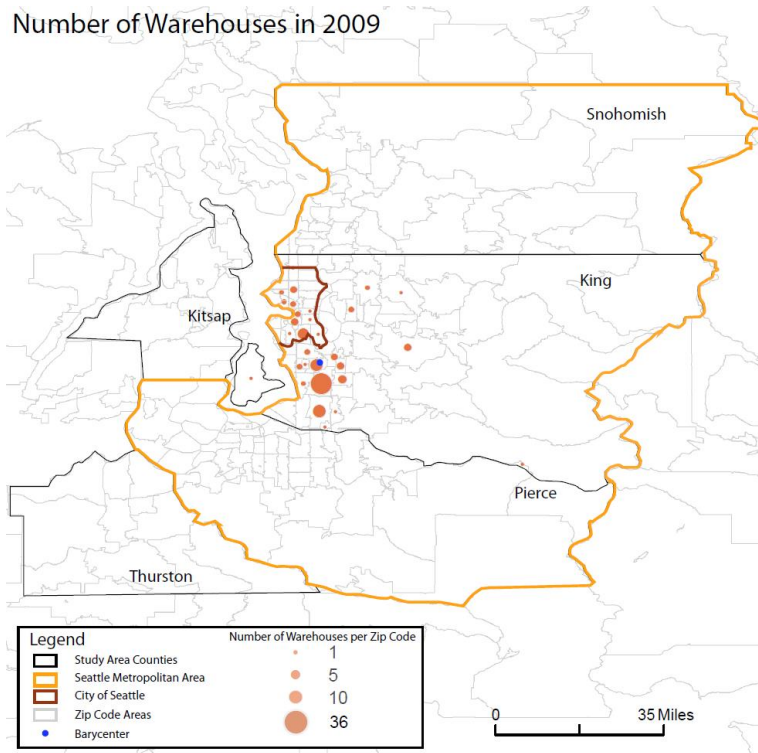
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The analysis was repeated for only King County, where the city of Seattle is located, shown in **Figures 7 and 8**, below. It was found that the barycenter moved 1.01 miles to the southwest, and the average distance from the barycenter decreased almost 20%, from 8.5 to 7.1 miles.



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FIGURE 6 King County warehousing, 1998 (Source: U.S. Census County Business Patterns).



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FIGURE 7 King County warehousing, 2009 (Source: U.S. Census County Business Patterns).

282 Similarly, the barycenter for all NAICS establishments in 1998 and 2009 was calculated. In this  
283 case, very little has changed other than growth in the total number of establishments. The barycenter  
284 moved 0.20 miles to the northeast.

285 As was completed with the Los Angeles data, the average distance of both warehouses and all  
286 establishments from their barycenter was calculated, with results as follows:

- 287 • In 1998, the average distance of warehouses from the barycenter was 12.8 miles, which decreased  
288 slightly to 12.0 miles by 2009, and
- 289 • The average distance of all establishments from the barycenter was 16.3 miles in 1998, compared  
290 to 16.5 in 2009.

291 These numbers suggest establishments in the Puget Sound region have not sprawled significantly since  
292 1998. Warehouses specifically may have even contracted spatially a small amount, however given the  
293 uncertainty of exact locations of warehouses within a zip code, we would conclude that the average  
294 distance remained relatively stable.

295

## 296 **DISCUSSION AND DIRECTIONS FOR FUTURE RESEARCH**

297

298 Warehousing in the Los Angeles area has increased in two geographically distinct places ó in the  
299 metropolitan center, both in the city and in LA County near the city, and much further from the city in  
300 western Riverside and San Bernardino counties. The city of Los Angeles has long been a warehousing  
301 hub because of its proximity to the San Pedro Bay Ports and has a long tradition of manufacturing  
302 activities in various places including close to the Downtown area. However there is limited room for  
303 further expansion because it is so densely populated and the size of land parcels is limited. Further east in  
304 Riverside and San Bernardino counties, there is more available land for new warehouses, and this land is  
305 considerably less expensive. Suburban and exurban areas such as these can connect to a more complex  
306 system of regional and national flows than more urban areas. Zip code 91761, for example, had more  
307 establishments than any other zip code studied. While located further away from the San Pedro Bay  
308 ports, this zip code contains parts of Interstate 15, Interstate 10, and State Route 60. Ontario International  
309 Airport is also located within this zip code, giving the area further connections (air cargo activity was  
310 437,000 tons in 2012). Additionally, many cities in these counties are taking steps to attract warehousing.  
311 The Coachella Valley Economic Partnership has stated that developing warehousing within the valley,  
312 which currently lies on the far eastern edge of the Inland Empire, is a high priority. Many have engaged  
313 in various promotional activities to attract logistics such as Moreno Valley (16, 24).

314 In the Seattle area, the number of warehouses and the number of zip codes with warehouses  
315 increased, including zip codes far to the southwest of the barycenter in Olympia, west across the Puget  
316 Sound, and north of Seattle. However few of these zip codes had more than one or two establishments.  
317 Only seven total zip codes had more than five establishments in 2009, and all were located less than 12  
318 miles from the barycenter. Zip Code 98032 in Kent, WA, which has more than twice as many  
319 warehouses as any other zip code in the Seattle area, is approximately 10 miles by road to both the Port of  
320 Tacoma and Port of Seattle, and is less than two miles from Seattle-Tacoma International Airport. The  
321 significant clustering of warehouses in the Kent/Renton area, near the weighted geographic center,  
322 affected the distribution such that the overall distribution has contracted slightly.

323 In Seattle, it was found that several zip codes which previously did not have any warehouses  
324 gained some. The effect of this expansion was mathematically negated by the much larger increase in  
325 warehouses near Kent, WA, which is relatively close to Seattle. When repeating the barycenter analysis  
326 for only King County, shown in **Figures 7 and 8**, it was found that the barycenter moved away from the  
327 county to the southwest, but that warehouses in this area moved closer to the barycenter on average. The  
328 clustering of warehouses is centrally located between the Ports of Seattle and Tacoma. Additionally, it is  
329 very close to SeaTac International Airport, and it is located next to Interstate 5 and State Route 167, the  
330 two major north-south routes in the area.

331 Why do we observe a clustering, and increased concentration of warehousing activity in the Puget  
332 Sound region, but sprawl in the Los Angeles area? While not a conclusive analysis, we can point to  
333 several factors that may be significant, some of which provide opportunity for further research.

#### 334 **Local Factors**

335 Some factors explaining the Seattle situation pertain specifically to Seattle. Zip code area 98032 is in a  
336 very favorable situation relative to the ports, airport, and freeways, and land was still available there at the  
337 end of the 1990s. Besides, there is a lack of large land parcels elsewhere, due in part to the physical  
338 geography of the Seattle metro area.

#### 339 **Very Large Metropolitan Areas vs. Smaller Metropolitan Areas**

340 One hypothesis is that logistics sprawl is characteristic of very large metropolitan areas, which serve both  
341 as trade nodes to the entire region/country as well as enormous consumer markets. Distribution centers  
342 need to be located close to regional infrastructure networks in order to serve the local, regional and  
343 national economy. Differentials in land prices (suburban-ex-urban land prices compared with central land  
344 prices) may also be more important in the largest metropolitan areas. To our knowledge, no empirical  
345 studies nor theoretical works are available that could verify a relationship between city size and  
346 warehouses' locational behavior. Although not looking at this particular question, Hall and Hesse (2013)  
347 from several case studies identify an ideal-typology of the relationship between places and goods flows,  
348 drawing lines between cities that clearly have very different sizes (17).

#### 349 **Growth Management**

350 Growth management looks at ways of conditioning residential and other developments to the provision of  
351 necessary services (utilities, infrastructure) and the minimization of negative impacts. It may have played  
352 a role in explaining the differences between Seattle and Los Angeles regarding the siting of logistics  
353 activities, although this second hypothesis requires further research. Unfortunately freight is generally  
354 omitted from the literature on growth management and sustainable transportation. Works assessing policy  
355 tools aimed at mitigating sprawl and climate impacts of transportation (25, 26) or proposing planning  
356 tools such as the "transport energy specification" (27) are provided but do not mention freight. "Urban  
357 growth boundaries" and "form-based codes" are two planning strategies increasingly adopted in U.S.  
358 cities that are deemed interesting (28) because they are regional and long term. These are the policies  
359 implemented by the states of Oregon, Washington and Tennessee. Indeed, in 1990, the Washington State  
360 legislature adopted the Growth Management Act. The purpose of this act was to ensure coordination  
361 between local and state governments with regards to growth. Local governments are required to follow a  
362 comprehensive planning process for any potential new developments. The act created a framework that  
363 actually constrains how and where warehouses can be constructed and may have affected how the  
364 distribution of warehouses has changed over time. However, specific assessment of the Growth  
365 Management Act on warehouses has not been made.

366 California has not implemented a similar policy of coordinated planning. SB375, the State's CO<sub>2</sub>  
367 mitigation through growth management legislation, leaves much leeway to local communities for final  
368 decisions on land uses and has led to some interesting developments in freight planning. In 2011, for  
369 example, the San Diego Association of Governments (SANDAG) became the first urban region of  
370 California to adopt a Sustainable Communities Strategy as a mandatory component of its regional  
371 transportation plan. It includes two actions directly related to freight land uses: "Update the SANDAG  
372 Regional Comprehensive Plan (RCP) to include policies, programs, and guidelines to integrate goods  
373 movement land uses and facilities, with minimal impact to adjacent communities." And "Support and  
374 provide assistance for the update of local general plans to identify the long-term needs of moving goods,  
375 industrial warehousing infrastructure, and connectors to the regional freight network. Coordinate this  
376 effort with economic studies and RCP updates." SB375, however, is not comparable to the strategy  
377 adopted in Washington. In metro Los Angeles, there happened to be a lot of open space to the east, in the  
378 "Inland Empire", the Riverside-San Bernardino-Ontario Metropolitan Area, which contributed to a

379 substantial increase in the number of warehouses there. This had the effect of both expanding the region  
380 as well as moving the barycenter to the east. While roughly 60 miles by road from the Ports of Los  
381 Angeles and Long Beach, these new warehousing districts are located in suburban areas near major  
382 freeways and an international airport. Due to the availability of cheap land, actions by suburban  
383 communities to encourage growth, and, potentially, lack of legislature to discourage growth, we see  
384 logistics sprawl occurring in the Los Angeles Metropolitan Area.  
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