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Improperly-zoned, spatially-marginalized, and poorly-served? An analysis of mobile home parks in Los Angeles County

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Abstract

More than 6% of Americans live in mobile homes, and yet there has been limited scholarly attention to mobile home location or quality of life compared to conditions in other housing types. There has not been a single comprehensive study to date that assesses where mobile home parks (MHPs) are located within metropolitan areas, that explores why some neighborhoods have a greater concentration of MHPs than others, or examines what environmental or basic service conditions are like in those neighborhoods. In California, more than 1 million residents live in mobile homes, with the vast majority (75%) of these living in MHPs rather than standalone units. We answer two questions in this study. First, are MHPs in “worse” neighborhoods in terms of socioeconomic status, zoning, local land uses, accessibility to jobs, and environmental quality? Second, which neighborhood factors are most strongly correlated with MHP locations and concentrations? We answer these questions using data for all mobile home parks in Los Angeles County, California. We find that MHPs are more likely to be located in lower density neighborhoods and at the urban fringe. More than 41% of MHPs are in areas zoned for commercial or industrial purposes rather than residential uses. Not surprisingly then, we find that MHPs are located in areas with more environmental hazards. A multivariate analysis of neighborhood factors confirms our hypotheses. Moreover, we find that MHPs’ access to public services is worse than the average neighborhood in the county. We recommend that policymakers engage in targeted efforts to address disparities in service access and mitigate environmental hazards.

Highlights

- Mobile home park location has not been studied.
- We find parks are located in lower density neighborhoods and at the urban fringe.
- More than 40% of parks are located in commercial or industrially-zoned areas.
- Neighborhood location of MHPs heightens insufficient public service access and hazard exposure.

Keywords

Mobile home parks, residential location, zoning, affordable housing, urban marginalization

Introduction

Although mobile homes comprise 6.2% of the American housing stock and house 5.6% of the U.S. population (U.S. Bureau of the Census, 2016), scholars have paid little attention to this housing type. In California – the most populous and economically productive state in the U.S., where one might expect less prevalence of this housing type, more than 1.1 million residents live in mobile homes (U.S. Bureau of the Census, 2016), with the vast majority (75%) living in mobile home parks (MHPs) rather than standalone units (U.S. Bureau of the Census, 2011).¹ The state had 5,238 active mobile home parks in 2017 which are registered with the California Housing and Community Development Department (HCD),² with 11% of MHPs³ located in Los Angeles County (California HCD, 2017). Despite reports of their demise, mobile homes – and the parks in which they are often located – remain an inexpensive and unsubsidized housing type hidden in plain sight. The residents of MHPs are poorer and more likely to be Hispanic or non-Hispanic White (NHW) than the average American (AHS, 2011). Therefore, understanding the locational characteristics and access to services associated with mobile home parks is an important social justice concern. We argue, drawing on the work of Ashwood and MacTavish (2016), that institutional structures have implicitly excluded mobile home parks through local land use regulation and housing affordability policy designs that focus on single-family homes and multifamily rental units, and these unjust practices have been normalized over time

Despite the central role mobile homes play as a source of low-cost and unsubsidized housing, there are few studies in the rich literatures on urban household residential location and affordability patterns which examine the spatial distribution of MHPs, or the quality of neighborhood services available to them (Dawkins and Knoebel, 2009). We know generally that mobile homes tend to be located in rural areas and the peripheries of urban areas, where substandard or scant public services have been documented (Baker, Hamshaw, & Beach, 2011; Aman & Yamal, 2010; Shen, 2005; Wubneh & Shen, 2004; Hart, Rhodes, & Morgan, 2002). Yet no single study to date has examined the factors that explain the types of neighborhoods in which MHPs locate, or the characteristics of environmental or basic service conditions in neighborhoods which house MHPs.

¹ Nationally, the trend is reversed, with two thirds (4.38% of total) living in standalone mobile homes, and 2.42% living in mobile home parks (U.S. Bureau of the Census, 2011).

² We recognize that the term “mobile homes” is often used to refer to a variety of housing types with varying quality of construction and spatial permanency. These types can range from recreational vehicles which are truly mobile, to panelized homes, kit homes, modular homes, and manufactured homes which are rarely if ever moved after installation. In this study, we do not explicitly distinguish between types of units which are located within mobile home parks which the California HCD regulates, but recognize that unit quality within and across them varies (see Dawkins and Koebel, 2010).

³ We focus on mobile homes located in parks rather than standalone units for both conceptual and practical reasons. First, we can identify the exact address and neighborhood location of parks, as opposed to standalone units. Moreover, we expect that parks are more prevalent in the metropolitan regions of interest than standalone units, and this intuition is borne out by suggestive data from the 2011 American Housing Survey, which shows 75% of LA County mobile home residents are located in parks. Moreover, as discussed more fully below, zoning regulations make it more likely that parks (but not standalone units) will be located outside neighborhoods zoned for residential use, and thus have worse environmental quality and access to services. Finally, even within the same neighborhood in urban areas, units located in parks are more likely to experience lower service quality due to the mediating service management role often assumed by park operators (reference redacted).

We hypothesize that, as with other types of vulnerable housing settlements, the location of parks within a metro area is likely to be non-random but rather driven by historical, market, and regulatory forces. We also hypothesize, drawing on the work of Morello-Frosch et al. (2011) to document cumulative impacts in environmentally unjust communities that MHPs are systematically located in lower-density, lower-income and lower-rent areas, with worse neighborhood services, environmental conditions and opportunities relative to neighborhoods without MHPs.

Accordingly, we combine data from multiple sources to examine two questions for the universe of active mobile home parks (N=601) in Los Angeles County census tracts (N=2,346). First, are MHPs located in “worse” neighborhoods in terms of socioeconomic status, zoning, local land uses, accessibility to jobs, and environmental quality? Second, which neighborhood factors most strongly correlate with MHP locations? Our methods are applicable to other U.S. counties, many of which have more MHPs per capita than Los Angeles.

To answer these questions, we map and describe the location of MHPs across city boundaries and by zoning classifications within Los Angeles County. We next use multivariate regression modeling to identify and examine the characteristics tied to the presence of an MHP, and the number of MHPs, across neighborhoods. We further examine service conditions in neighborhoods with MHPs.

We find that MHPs are commonly located in neighborhoods with lower population density, and which are situated outside of the county’s large cities. We also find that a high proportion of MHPs are located in areas zoned for commercial or industrial purposes rather than residentially-zoned areas. Not surprisingly, we find that MHPs are located in areas with more environmental hazards. A multivariate analysis of neighborhood factors confirms our hypotheses. We also provide evidence that access to basic services and economic opportunities within MHP neighborhoods is worse than the metropolitan average.

Our results have implications for both policymakers and planning researchers. For policymakers, we make the case for more targeted efforts to address disparities and mitigate environmental hazards for MHPs, given that they are spatially identifiable as opposed to standalone mobile home units. We encourage scholars to replicate and expand this analysis in the context of other metropolitan areas to better understand the effects of local policies, including zoning decisions, on MHP locations.

Existing evidence about mobile home park locations and service conditions

Mobile homes were introduced in the United States in the 1930s, and were first viewed as temporary housing. Short-term construction was particularly common after World War II when mobile homes were used as emergency housing for servicemen and defense plant workers (Furman, 2014; Tremoulet, 2010; French & Hadden, 1965). Subsequently, many of these dwellings were converted or upgraded, and mobile homes became an increasingly popular form of permanent housing. Over the decades, drastic increases in quality, amenities, size, and an

average sale price under \$70,000⁴ have made these dwelling units attractive and suitable for permanent living and have contributed to the mobile home becoming ironically rather immobile. About 6% of the U.S. population lives in mobile homes, and more than one-third of these are situated in mobile home parks (ACS, 2016), we have little empirical evidence about the location of or living conditions in MHPs. Following is an overview of what we know.

The rapid increase in the number of mobile homes after WWII led to a short-lived interest by scholars of that era to argue for the need to do research on the siting and characteristics of mobile home parks, and the impact and special problems created by their “mobileness” to surrounding communities (French & Hadden, 1965). Scholarly interest in mobile homes has periodically revived, but largely to document their alleged decline (Wallis, 1991) and how much about them is unknown (Hart et al., 2002). The interest was likely in part due to MHP communities portrayed by the popular image of factory-built residences as “ramshacks” and its residents as “trailer trash” – an enduring image for these communities (Furman, 2014). However, residents of mobile homes see the quality of their homes to comparable to traditional site-build homes but at a lower cost (Boehm, 1995). Moreover, manufactured homes built since 1974 are required to be compliant with the U.S. Housing and Urban Development Code, a national building code which governs the construction of manufactured homes but not other forms of factory-built housing (Dawkins and Knoebel, 2009)

Today, scholarly research on MHPs in the U.S. is largely outdated (McCarty, 2010). In fact, we maintain that the words of Boehm (1995) over twenty years ago bear repeating: “after years of unsatisfactory attempts at development of a housing policy that would improve the quality of housing for low income families, it seems appropriate to explore the merits of an often-ignored alternative – manufactured housing (or mobile homes)” (373-374).

Research in the past decade has focused mainly on criminal activity (e.g., McCarty, 2010; McCarty, 2013) and, likely due to the housing bust of 2007, the persistence of negative equity for owners of manufactured units (Carter III, 2012), as well as other challenges to homeownership (e.g., Aman & Yamal, 2010). Other research has included discussions on the use and conditions of mobile homes as temporary housing in emergency management (Evans-Cowley & Canter, 2010) and to house migrant workers (Larrance, Anastario, & Lawry, 2007). More recent scholarly research has only begun to touch on the quality of life issues facing mobile home communities, particularly those in rural America (e.g., Baker et al., 2011), as well as accessibility to quality public services like drinking water (reference redacted). The contemporary social justice implications of living in this type of housing have only been explored, including the inability to move by those that own their mobile homes, the lack of sense of community in parks, and discrimination against residents by surrounding neighborhoods (MacTavish, 2007; Salamon & MacTavish, 2017).

Regional location and local land uses

Mobile homes have been stigmatized in American culture and the development of MHPs is met with public resistance rooted in perceptions about the occupants as well as the design and quality of the housing itself (Atiles 1995; Beamish et al., 2001). Therefore, it seems reasonable to expect

⁴ According to census data reported by the Manufactured Housing Institute, price excludes cost of land but includes typical cost of installation. See Manufactured Housing Institute, 2016,

mobile home parks to be located in poorer and more isolated areas. Qualitative studies suggest that mobile homes tend to be located in rural areas or at the urban fringe, where public services are subpar (Baker et al., 2011; MacTavish, 2007). One study, Shen (2005), documents the location of manufactured housing and its accessibility to community services within a county.⁵ In Pitt County, North Carolina, relative to other housing types, mobile homes were farther away from community amenities and major employment centers, and a higher proportion were found in flood zones (Shen, 2005). While Shen did not find that manufactured homes were placed closer to large polluting facilities, such as landfills, his findings reinforced the claim that cities and counties can use zoning laws to discriminate against manufactured housing (Shen, 2005).

Some of these locational characteristics are the result of local land use regulations. Land use regulations historically pushed mobile homes away from residentially-zoned neighborhoods (Beamish, Goss, Atilas, & Kim, 2001; Sanders, 1998). In fact, some cities have used their zoning codes to restrict mobile homes to non-residential zones or forbid them altogether (Mandelker, 2016). In the 1940s, some Los Angeles County cities only allowed MHPs in commercial or industrial zones; in fact, four cities only allowed MHPs in *heavy* industrial zones (Richerson, 1950). Beyond physical land use regulation, affordable housing policies also do not promote the production and placement of mobile homes in metropolitan cities. Subsidies for low-cost housing producers, such as mobile homes, are not a main focus of affordable housing policies (Dawkins & Koebel, 2009).

The trend of isolating MHPs seems to be changing. In 1970, mobile homes were permitted “by-right” in 1% of cities responding to an American Planning Association survey (Sanders, 1998). By-right zoning increased to 52% in 1985 and to 83% in 1996. Although more recent data are not available, the trends described by Sanders (1998) suggest a positive feedback loop in which national standards have led to better quality manufactured housing that in turn have improved municipal acceptance of the housing type. Even if perception of manufactured housing has improved over the years, municipalities may be reluctant to permit mobile home parks because this land use type is perceived to be a fiscal drain by producing service needs in excess of revenue generation (Genz, 2001).

Environmental quality

While we know MHPs sit across a spectrum of quality characteristics, we know little about the types of neighborhoods mobile home parks are in, the environmental quality of these areas, or the basic service conditions in those neighborhoods. From the narrow water quality literature, neighborhood income does not appear to significantly impact service reliability (reference redacted). However, we do know that MHP residents tend to be of lower income, have lower levels of educational attainment, and are more racially diverse than the general population (Genz, 2001; MacTavish, Eley, & Salamon, 2006). These household socioeconomic and demographic characteristics are correlated with water service reliability (reference redacted) and lower quality drinking (reference redacted).

⁵ Though mobile home parks may be disproportionately rural and poor, a smaller subset of mobile home parks are higher-end subdivision-style communities with “recreation centers, pools, and even golf courses” (Genz, 2001, p. 395).

More generally, the socioeconomic characteristics of MHP residents are also associated with greater social vulnerability to environmental hazards (Cutter, Boruff, & Shirley, 2003). This has been documented in the accumulation of specific contaminants, such as nitrates, from agricultural runoff into water supplies servicing MHPs (Moore et al., 2011). Mobile home units are also more likely to contain mold (reference redacted). MHP residents may also be disproportionately impacted by urban heat islands and be burdened by increased energy costs associated with less energy efficient manufactured housing (Wilson, 2012). The lower efficiency is assumed to be due to the structural quality of units (Wilson, 2012), and this combined with poorer connections to utility services poses a significant affordability and environmental sustainability challenge.

Neighborhood access to opportunity

A growing number of scholars have analyzed neighborhood access to opportunity and the outcomes from residential location. This refers to the idea that residential locations matter and affects physical and social upward mobility through access to high quality schools, employment opportunities, transportation resources, and a quality environment, among other resources. Most notable is the vast and expanding literature on neighborhood effects, which shows that people residing in disadvantaged neighborhoods fare worse on a variety of life outcome (See Sampson, 2012 and Galster, 2012 for an extensive review of the sociological literature). For instance, Ludwig et al., (2013) examined the long-term effects of moving from very disadvantaged neighborhoods to less distressed areas on low-income parents and children. Although their results are mixed across traditional academic indicators of life outcomes, they conclude by recognizing that “neighborhood environments have important impacts on the overall quality of life and well-being of low-income families” (Ludwig et al., 2013, p. 231).

Differences in the environmental quality of neighborhoods, as well as jobs, or “risk setting” also contribute to health disparities, psychosocial stressors and resources, environmental justice issues, and vulnerability/susceptibility to environmental exposures (Payne-Sturges & Gee, 2006). While the literature on regional location and land use suggests MHPs would be likely to be geographically isolated and residents are socially vulnerable, we did not find a dedicated study on MHPs in the growing literature on neighborhood effects and opportunity.

Employment accessibility is one of the most important measures of neighborhood opportunities (Pendall et al., 2014). As such, a second relevant literature on residential location and access is the “spatial mismatch hypothesis” (SMH), which posits that people living in low-income minority neighborhoods are spatially disconnected from new job opportunities (Taylor & Ong, 1995, p. 1456). The SMH literature started with the work of Kain (1968) on the adverse labor outcomes of African Americans in urban cities (See Kain, 2004; Glaeser, Hanushek, & Quigley, 2004; and Gobillon, Selod, & Zenou, 2007; for a review of the literature) and has been since expanded to include mechanism related to job (in)accessibility as it relates to skills mismatch (e.g., Immergluck, 1998), and transportation mode mismatch (e.g., Blumenberg & Ong, 2001; Taylor & Ong, 1995).

Spatial inequality in place outcomes, geographic access, and transportation mobility in Los Angeles have also been documented as barriers to education for students in poor neighborhoods who not only attend lower performing schools but are more geographically isolated as they have

fewer transportation resources (Ong & Ong, 2016). While transportation is also a significant determinant of the economic outcomes for low-income families, the vast literature examining transportation access, residential location and job accessibility have overlooked mobile home residents, even though they are disadvantaged within the physical and socioeconomic urban spatial structure.

Data sources

We use a range of administrative data to examine MHP location, neighborhood socioeconomic, zoning, land use and environmental quality status. Our study exploits a reliable source of data on the location of MHPs in Los Angeles County from the L.A. County Fire Department, which collected this information in response to fire events that burned through mobile home parks in the county. Each mobile home park in the Fire Department's list contains the park name, address, number of units,⁶ and a park ID. The data was last updated by the Fire Department in 2013 and was collected to closely match parcel boundaries.

A limitation of our data on MHP locations is the lack of comprehensive information on the date of park formation. We were able to identify the data of formation for 181 of 601 MHPs from the commercial website, MHvillage.com,⁷ but the source of these dates is unclear, coverage represents less than one-third of all parks and is likely an unrepresentative sample of parks. Accordingly, we cannot use these data in our analysis of all MHPs in the county.

These incomplete MHvillage.com data show an average year of park formation to be 1964. This suggests that many or most MHPs are decades old, and that present-day neighborhood conditions cannot be broadly attributed as causing or influencing the present-day siting of MHPs. We suggest steps for future research regarding this topic in the discussion section of this study.

We also use the Southern California Association of Governments' (SCAG) 2009 regionalized zoning data to assign basic zoning characteristics to each MHP (Southern California Association of Governments, 2009). We first use the SCAG data to classify the 601 MHPs in L.A County into 130 unique local zoning designations. We then review local zoning codes and divide these 130 zoning designations into six major categories: general residential; residential limited to mobile homes; industrial/manufacturing; commercial; agricultural; and other.

We also analyze the specific zoning provisions for mobile homes and MHPs for the 18 jurisdictions shown in Table 1 and 3. Similar to Sander's (1998) national survey of municipalities, we identify if a community permits mobile homes in some residential districts, permits mobile homes in its most restrictive residential district, and permits mobile homes on individual lots. We also examine if the jurisdiction has a specific zoning designation for MHPs and whether it allows mobile homes or MHPs in non-residential zones.

⁶ As a check, we verified that the number of parks in the fire department data matches the number of parks on a list maintained by the HCD and closely tracked the number of parks listed in a national, commercial website, www.mobilehomes.net.

⁷ The MHvillage.com data was obtained from:
<https://www.mhvillage.com/Communities/MobileHomeParks.php?State=CA&County=Los%20Angeles>

We use several environmental quality measures from the California Environmental Protection Agency’s CalEnviroScreen 2.0 dataset (California Environmental Protection Agency, 2014). These data are available by Census tract and include measures of air pollution, water pollution, and toxics. To characterize drinking water access characteristics across the county, all community water systems— those serving residential populations year-round— in the county were also mapped and coded by governance type, average cost to consumers and groundwater dependency (source redacted). Finally, for socioeconomic neighborhood variables, we use Census tract-level data from the 5-year 2010-2014 American Community Survey.

We use the EPA Smart Location Database (SLD) version 2.0 for data related to the population, housing, and employment density by block group across Los Angeles County (U.S. Environmental Protection Agency, 2013). The SLD is a publicly available dataset that includes more than 90 attributes related to housing density, diversity of land use, neighborhood design, destination accessibility, transit service, employment, and demographics. The national dataset includes estimates of the number of jobs accessible by auto or transit within a 45-minute commute by Census block group (U.S. Environmental Protection Agency, 2013). Most attributes are available for every census block group in the United States.

Methods

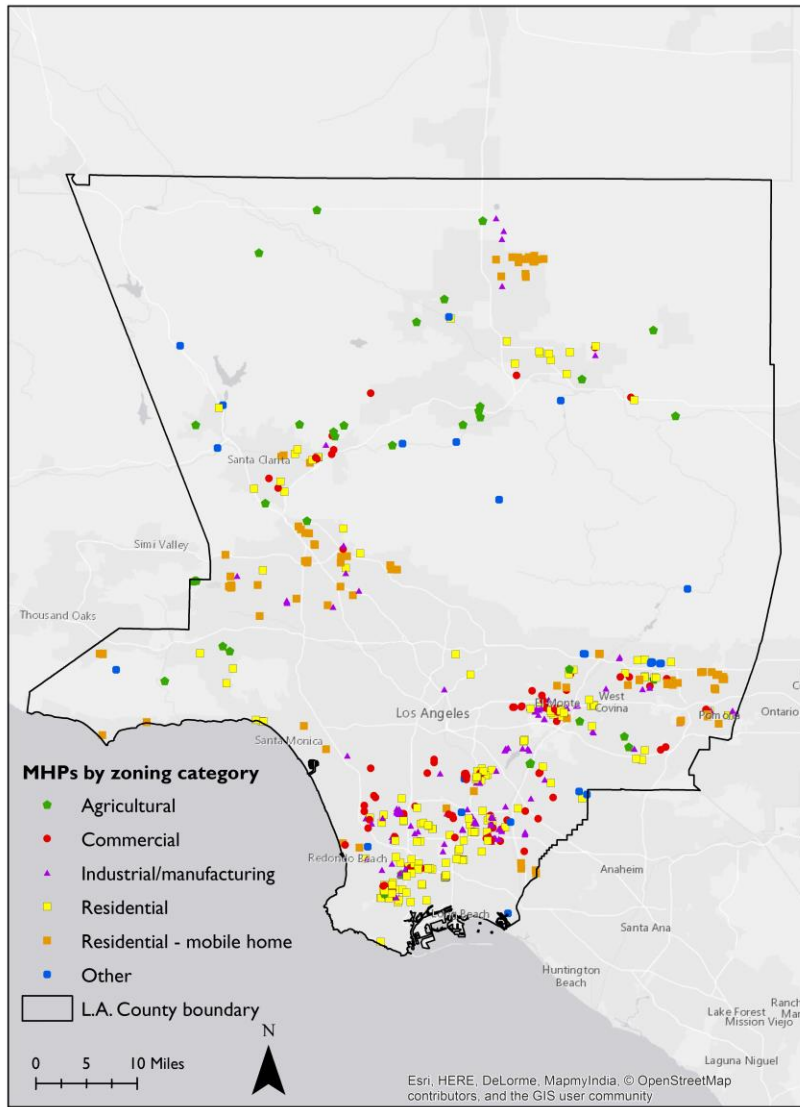
We first present descriptive statistics on MHP locations by jurisdiction in Los Angeles County, zoning designation, and population density. We then use multivariate regression techniques to model a neighborhood count of MHPs as a function of variation in neighborhood socioeconomic, land use and environmental quality characteristics, while holding other factors constant.

We select a negative binomial regression model due to the count nature of the outcome variable and the over-dispersed nature of the conditional means. We use Stata 13.0 software to implement the model. In Table 4, we report coefficients, robust standard errors and incident rate ratios for each independent variable. The model presents little cause for concern regarding collinearity between independent variables, suggesting that it is well specified. Variance inflation factors for all independent variables were in the range of 1.12 to 3.65, with an average variance inflation factor of 1.97. A likelihood ratio test that alpha equals zero—the likelihood ratio test comparing this model to a Poisson model – also strongly suggests that alpha is non-zero and the negative binomial model is more appropriate than the Poisson model.

Describing MHPs’ neighborhood characteristics

We generally expect MHPs to be located in poorer, lower rent, more diverse neighborhoods, as they are a more affordable living option than other housing types in metropolitan areas. A simple map (Figure 1) of mobile home parks in Los Angeles County illustrates the non-random distribution of MHPs in the county. Moreover, this map suggests a divergent relationship between municipally-incorporated neighborhoods and the density of MHPs.

Figure 1. MHP Locations in Los Angeles County, Color Coded by Zoning Category



Local governments and land use regulations

Mobile home parks are spread across 54 of the 88 municipalities and unincorporated Los Angeles County. Table 1 suggests that MHPs are more likely to be located in less populated jurisdictions in the county. For instance, more than 17% of MHPs are located in unincorporated L.A. County, contrasting with only 11% of the county’s population living in those areas. Moreover, less than 10% of MHPs are located within the city of Los Angeles, although nearly 40% of the county’s population is housed there, and most other large cities have fewer MHPs per capita than the county average.

Table 1. Mobile Home Parks by Jurisdiction Share of County Population

| Jurisdiction | MHPs | % of County's MHP Total | % of County Population |
|---------------------|-------------|------------------------------------|-----------------------------------|
| Unincorporated | 101 | 17% | 11% |
| Los Angeles | 57 | 9% | 39% |
| Bellflower | 38 | 6% | 1% |
| El Monte | 33 | 5% | 1% |
| Lancaster | 25 | 4% | 2% |
| Carson | 23 | 4% | 1% |
| Gardena | 23 | 4% | 1% |
| Bell Gardens | 20 | 3% | 0.4% |
| Long Beach | 19 | 3% | 5% |
| Santa Clarita | 19 | 3% | 2% |
| Pomona | 18 | 3% | 2% |
| Paramount | 16 | 3% | 1% |
| Lomita | 15 | 2% | 0.2% |
| Cudahy | 14 | 2% | 0.2% |
| South El Monte | 14 | 2% | 0.2% |
| All others | 166 | 28% | 36% |
| Total | 601 | 100% | 100% |

Moreover, there are disparities between the zoning of neighborhoods which MHPs are located in and the general housing stock. As Table 2 shows, some municipalities have specific residential zoning designations for mobile home parks. This does not mean, however, that all MHPs are situated in areas specifically zoned for MHPs. Many municipalities also permit MHPs in general residential zones. But, while most of Los Angeles County's housing is in single-family or multifamily zoning, less than half of MHPs are in either type of residential zone.

Table 2. Mobile Home Parks by General Zoning Category

| General Zoning Category | MHPs | % of County Total |
|------------------------------------|-------------|------------------------------|
| Residential - General | 172 | 28.6% |
| Industrial/Manufacturing | 140 | 23.3% |
| Commercial | 110 | 18.3% |
| Residential - Mobile Home | 104 | 17.3% |
| Other | 39 | 6.5% |
| Agricultural | 36 | 6.0% |
| Total | 601 | 100.0% |

A surprisingly large share – over 23% – of MHPs are located in industrial or manufacturing zones. As Table 3 shows, in many cities, at least half of the MHPs were in these types of zones. This is a surprising finding given the fundamental American zoning ideal of separating

residential and industrial uses. We used aerial imagery and Google Streetview photos to confirm that these MHPs are indeed located on major roads and/or bounded by industrial uses. In some areas, there are clusters of MHPs that are surrounded on all sides by warehouses. This subset of MHPs is likely exposed to the highest levels of local pollutants, and includes some of the lowest quality mobile home stock combined with the most vulnerable households. Given the suggestive evidence we have on data of MHP formation, industrial locations of MHPs likely largely reflect the legacy of previous zoning standards. New MHPs are not permitted to be sited in industrial zones in most of these cities today. None of the cities in Table 3 now allow MHPs by-right in industrial zones and only two cities allow MHPs in these zones as a conditional use. While the presence of existing MHPs in industrial zones is concerning for planning and policy for existing housing stock, few or no new MHPs are being established in these areas.

Zoning codes in Los Angeles County are generally permissive in terms of allowing manufactured housing in residential zones, consistent with Sander’s (1998) national survey results. All of the 18 jurisdictions highlighted in tables 1 and 3 allow manufactured housing on permanent foundations in some residential districts, and 14 allow manufactured housing even in the most restrictive residential zones. Some of the jurisdictions do impose additional development standards on manufactured housing relative to stick-built housing, including design standards and site plan review. Zoning codes also restrict MHPs more than manufactured housing on an individual parcel. Five of the cities have specific zones for MHPs, one city has an overlay zone that must be applied prior to MHP approval, and the rest have varying degrees of restrictions on MHPs. Additionally, given the extent to which written regulations are subject to interpretation and administrative discretion, further research should examine how planning departments apply the zoning code to manufactured housing and MHPs; municipalities could make it easy or difficult to approve new MHPs.

Table 3. Mobile home parks in industrial or manufacturing zones, by jurisdiction

| City or other jurisdiction | MHPs in Industrial Manufacturing Zones | Total MHPs |
|--|---|-------------------|
| Bellflower | 22 | 38 |
| Unincorporated L.A. County | 20 | 101 |
| Gardena | 15 | 23 |
| Los Angeles | 11 | 57 |
| South El Monte | 9 | 14 |
| El Monte | 6 | 33 |
| Paramount | 6 | 16 |
| Bell Gardens | 5 | 20 |
| Pomona | 5 | 18 |
| Torrance | 5 | 11 |
| Compton | 4 | 13 |
| Montebello | 4 | 4 |
| Other municipalities with MHPs in industrial zones | 28 | 134 |

| | | |
|--|------------|------------|
| Other municipalities with no MHPs in industrial zones | 0 | 119 |
| Total | 140 | 601 |

Population and housing density

Our findings also show that MHPs are typically located in low-density areas within the county. In terms of housing density, the median MHP is located in a block group with a density of 4.82 units per acre. This is about 14% less dense than the median block group in L.A. County. More than 90% of MHPs are in block groups with fewer than 9 units per acre, and 25% of MHPs are in block groups of fewer than 2.1 units/acre. This is particularly important because, similar to the situation in unincorporated areas, municipalities find it more difficult to economically, and in some cases fail to, provide adequate public services to these low-density neighborhoods within their jurisdictions.

Explaining the locations of MHPs in Los Angeles County

The regression model results (Table 4) generally bear out our initial hypotheses and our descriptive findings. Neighborhoods with higher percentages of industrial jobs – suggesting higher industrial land uses – are more likely to house MHPs, all else equal. Population density is associated with fewer MHPs in a neighborhood. Moreover, confirming our expectation, we find that higher neighborhood income levels and average home values are strongly negatively associated with the number of mobile home parks in a neighborhood. Moreover, neighborhoods with older housing stocks and lower environmental quality (higher pollution burden) are more likely to house higher numbers of MHPs. We find a mild negative relationship between the non-Hispanic (NHW) white population share of a neighborhood and the number of MHPs.

Table 4. Multivariate model of neighborhood characteristics associated with MHP location

| Independent Variable | Coefficient (robust standard error) | Incident Rate Ratio |
|--|--|----------------------------|
| Population density (1000s per square mile) | -.075 (.007)*** | 0.928 |
| Median household income (\$1000s) | -.014(.004)*** | 0.986 |
| Share of population that is NHW | -.538 (.323)* | 0.584 |
| Average residential rent (\$1000s) | -.766 (.264)*** | 0.465 |
| Median year of housing construction | .055 (.005)*** | 1.056 |
| Percent of jobs that are industrial | 1.004 (.244)*** | 2.729 |
| Pollution burden score | .209 (.042)*** | 1.233 |

Model statistics: n=2344; Log pseudo likelihood = -1267.834

Likelihood-ratio test of alpha=0: $\chi^2(01) = 236.99$; Prob>= $\chi^2 = 0.000$

* p-value < .10; ** p < .05. *** p-value < .01

Access to Services and Opportunities

We also assess MHP residents' service access along two illustrative dimensions identified in the broader literatures on basic service access and neighborhood opportunities: type of drinking water service provider and employment accessibility by different travel modes. We consider these outcomes separately from the multivariate analysis because we have data on them at a finer geographic resolution than the tract scale, and the better spatial resolution to match with MHP locations allows for more precise analysis of access and opportunities available to particular MHPs.

Drinking water access

Drinking water access is the most fundamental service need of every household. Disparities in water access within MHPs also illustrate the broader and oftentimes negative mediating role which park managers play in service access for residents (reference redacted). Numerous studies have shown, however, the shortcomings of small – those serving 200 residences or fewer – publicly-regulated water systems across the U.S. in providing affordable, reliable, and safe drinking water (Romano & Guerini, 2011; Pieper, et al., 2015), and particularly small water systems exclusively serving MHPs (reference redacted). There are 218 drinking water systems in Los Angeles County; 26 of these (12%) exclusively serve MHPs, a proportion mirroring the California average.

Moreover, among MHPs in L.A. County not served by park-specific systems, MHPs are more likely to be served by private companies (35%) than municipal systems (20%). Private companies typically charge higher prices than municipal systems. MHPs are also three times more likely than other to be served by systems which exclusively rely on local groundwater, which are subject to shortages and other reliability issues (reference redacted). In other words, living in an MHP in Los Angeles is associated with worse drinking water service reliability, quality, and affordability.

Employment accessibility by travel mode

Employment accessibility is one of the most important measures identified in the neighborhood opportunities literature (e.g., Pendall et al., 2014). Employment accessibility includes local and regional access to jobs. Given the significant share of MHPs in commercial and industrial zones, we might expect good local access to jobs and higher-than-average employment densities directly around MHPs, yet we find considerable variation in this respect. The median MHP is located in a block group with 2.48 jobs/acre (13% higher than the countywide median), but about 25% of MHPs are in block groups with fewer than 0.79/jobs per acre.

Regional access to jobs is arguably more important than hyper-local access yet MHPs are disadvantaged in this respect. As shown in Table 5, MHPs are located in block groups that are slightly less accessible to the region's jobs by auto than the county's median block group. MHPs have notably poor transit accessibility. Nearly 35% of MHPs (210 of 601) are in block groups that do not have a bus stop within $\frac{3}{4}$ mile, based on EPA analysis of the street network and bus stop locations. Relatedly, transit riders in MHPs have much worse access to the region's jobs

than a resident in the county’s median block group. For MHP residents, having access to an automobile increases the number of jobs accessible within 45 minutes by 60 times.⁸

Table 5: Employment accessibility for MHP residents

| Variable | MHP neighborhoods | All L.A. County neighborhoods |
|--|--------------------------|--------------------------------------|
| Jobs accessible within 45 minutes by automobile (median) | 499,181 | 522,962 |
| Jobs accessible within 45 minutes by transit (median) | 8,093 | 12,323 |
| % partially or fully within 1/2 mile of fixed guideway transit | 10% | 16% |

Source: Tabulated by authors using data from the EPA Smart Location Database v2.0

Discussion

Mobile homes are one of the most viable affordable housing options in Los Angeles’ tight housing market (Furman, 2014). Local and state governments increasingly acknowledge mobile home preservation to be an important affordable housing strategy. Our findings suggest that the location of mobile home parks, while providing relatively inexpensive housing, also present a number quality of living tradeoffs for their residents. Moreover, exposure to hazards within MHP neighborhoods – like extreme heat and fires – is likely to only increase as the climate changes (Cutter, 2003).

The most intransigent issue is the share of MHPs located in industrial or commercial zones. Our data do not allow us to confidently identify whether the MHP or the zoning designation came first in a given neighborhood, but historical evidence suggests that some cities encouraged or required MHPs to locate in non-residential zones. Supporting residential uses in non-conforming zones is a balancing act. On one hand, jurisdictions should use zoning to separate residences from noxious uses and low-opportunity areas. On the other, some of these MHPs may be the only viable affordable housing option for residents, and some residents may be one step away from homelessness if forced out of their MHP. We plan to further explore these dynamics with future in-depth qualitative research, including interviews of residents, property owners, and city officials to better understand the policy and housing market considerations in these areas.

We also need to learn more about the residents of mobile home parks and their public service needs to fill the lack of understanding about how mobile home park residents are able to “access opportunity” and barriers created by potential spatial mismatch.. Some residents may not be in the workforce and thus job accessibility is not a relevant consideration. On the other hand, some residents – like children and seniors – may be particularly vulnerable to environmental hazards

⁸ The EPA Smart Location Database factors in walk time to the transit stop. The database undercounts job accessibility by transit somewhat in that it does not include Long Beach Transit or Santa Monica Big Blue Bus, two local transit providers in L.A. County.

near MHPs. It would be useful to survey and interview residents of MHPs to understand how they view the disamenities of location which we quantify in this paper. t

There is not enough low-cost housing in Los Angeles County for people who want or need to move out of MHPs. These residents would benefit from a robust set of permanent affordable housing alternatives. For the bulk of residents who remain in MHPs by choice or necessity, state and local governments should focus on affordable housing preservation and industrial pollution mitigation strategies to ensure basic quality of life outcomes. Targeting transportation support services to allow residents of these neighborhoods to reach economic opportunities, perhaps through existing city or county-run services like dial-a-ride or contracting with ridesharing is feasible. Planning for other individual services such as drinking water, however, is not likely to take place in a standalone sectoral fashion but rather through the extension or deepening of coordinated municipal service planning efforts.

Accordingly, more holistic neighborhood planning for preserving and protecting mobile home parks needs to take place across sectoral agencies. One focused approach for planning in California may be to focus on MHPs within disadvantaged unincorporated communities, which are state-defined unincorporated tracts with less than 80% of median state income. These communities are supposed to receive comprehensive support to ensure adequate basic services access by county-level Local Area Formation Commissions (California Senate Bill 244; Wolk, 2011). The functioning of these commissions to date, however, has been at best uneven.

Conclusions

Using data from Los Angeles County, this study is the first to comprehensively assess where MHPs are located within a metropolitan area, examine the municipal and neighborhood-level factors most strongly correlated with concentrations of MHPs, and provide suggestive evidence regarding basic service conditions in those neighborhoods. We find that mobile home parks are located in lower density neighborhoods and in less populated jurisdictions. We also find that a sizable share of MHPs are located in areas zoned for commercial or industrial purposes, not residential uses. The prevalence of environmental hazards and inadequate public services near many mobile home parks is an obvious cause for concern. These findings hold after controlling for other neighborhood factors correlated with mobile home park location. Moreover, we provide suggestive evidence that access to water and job opportunities within MHP neighborhoods is worse than the metropolitan average.

The problems with MHP neighborhoods described in this study are only likely to be more prevalent and problematic in lower-cost metros, and in areas where MHPs are more prevalent (outside of California). MHPs, both their possibilities and pitfalls, have been too little explored in the very vibrant debate on the tradeoffs between housing affordability and other neighborhood conditions in Los Angeles, California, and beyond. Addressing the tradeoffs which many park residents face will ensure that these households not only have access to affordable housing, but also to basic health and opportunity outcomes.

References

- Aman, D. D., & Yarnal, B. (2010). Home sweet mobile home? Benefits and challenges of mobile home ownership in rural Pennsylvania. *Applied Geography*, 30(1), 84–95. doi:10.1016/j.apgeog.2009.09.001
- Ashwood, Loka, and Kate MacTavish. "Tyranny of the majority and rural environmental injustice." *Journal of Rural Studies* 47 (2016): 271-277.
- Atiles, J. H. (1995). *Manufactured housing: An assessment of community attitudes* (Doctoral dissertation, Virginia Tech).
- Baker, D., Hamshaw, K., & Beach, C. (2011). A window into park life: findings from a resident survey of nine mobile home park communities in Vermont. *Journal of Rural and Community Development*, 6(2). Retrieved from <http://journals.brandonu.ca/jrcd/article/view/415>
- Beamish, J. O., Goss, R. C., Atiles, J. H., & Kim, Y. (2001). Not a trailer anymore: Perceptions of manufactured housing. *Housing Policy Debate*, 12(2), 373–392. doi:10.1080/10511482.2001.9521410
- Blumenberg, E., & Ong, P. (2001). Cars, buses, and jobs: Welfare participants and employment access in Los Angeles. *Transportation Research Record: Journal of the Transportation Research Board*, 1756(2001), 22–31. doi:[10.3141/1756-03](https://doi.org/10.3141/1756-03)
- Boehm, T. P. (1995). A comparison of the determinants of structural quality between manufactured housing and conventional tenure choices: Evidence from the American Housing Survey. *Journal of Housing Economics*, 4(4), 373-391.
- California Department of Housing and Community Development. (2017). Mobilehome & RV Parks Search.CASAS 2: Codes & Standards Automated System. Retrieved from: <http://www.hcd.ca.gov/manufactured-mobile-home/mobile-home-parks/index.shtml> (Click on “Find a park”).
- California Environmental Protection Agency. (2014). *California communities environmental health screening tool, version 2.0 (CalEnviroScreen 2.0)*. Sacramento, CA. Retrieved from <http://oehha.ca.gov/media/CES20FinalReportUpdateOct2014.pdf>
- California Senate Bill 244 (Wolk, 2011). Local government: land use: general plan: disadvantaged unincorporated communities.
- Carter III, G. R. (2012). Housing Units with Negative Equity, 1997 to 2009. *Cityscape*, 149–165.
- Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003). Social vulnerability to environmental hazards. *Social Science Quarterly*, 84(2), 242–261. doi:10.1111/1540-6237.8402002

- Dawkins, C. J., & Koebel, C. T. (2009). Overcoming barriers to placing manufactured housing in metropolitan communities. *Journal of the American Planning Association*, 76(1), 73-88.
- Evans-Cowley, J., & Canter, A. (2010). Hurricanes, Oil Spills, and Discrimination—Oh My: The Story of the Mississippi Cottage. *Journal of Affordable Housing & Community Development Law*, 35-78.
- Furman, M. (2014). Eradicating substandard manufactured homes: Replacement programs as a strategy. Joint Center for Housing Studies and NeighborWorks America. Boston, MA. Retrieved from http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/w15-3_furman.pdf
- French, R. M., & Hadden, J. K. (1965). An analysis of the distribution and characteristics of mobile homes in America. *Land Economics*, 41(2), 131-139. doi:10.2307/3144267
- Galster, G. (2012). The mechanism(s) of neighbourhood effects: Theory, evidence, and policy implications. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood effects research: New perspectives*. 23-56. Dordrecht: Springer.
- Genz, R. (2001). Why advocates need to rethink manufactured housing. *Housing Policy Debate*, 12(2), 393-414. doi:10.1080/10511482.2001.9521411
- Glaeser, E. L., Hanushek, E. A., & Quigley, J. M. (2004). Opportunities, race, and urban location: The influence of John Kain. *Journal of Urban Economics*, 56(1), 70-79. doi:[10.1016/j.jue.2004.03.002](https://doi.org/10.1016/j.jue.2004.03.002)
- Gobillon, L., Selod, H., & Zenou, Y. (2007). The mechanisms of spatial mismatch. *Urban studies*, 44(12), 2401-2427. doi:[10.1080/00420980701540937](https://doi.org/10.1080/00420980701540937)
- Hart, J. F., Rhodes, M. J., & Morgan, J. T. (2002). *The unknown world of the mobile home*. Baltimore, MD: The John Hopkins University Press.
- Immergluck, D. (1998). Job proximity and the urban employment problem: Do suitable nearby jobs improve neighbourhood employment rates?. *Urban Studies*, 35(1), 7-23. doi:[10.1080/0042098985041](https://doi.org/10.1080/0042098985041)
- Kain, J. F. (1968). Housing segregation, negro employment, and metropolitan decentralization. *The Quarterly Journal of Economics*, 82(2), 175-197. doi:[10.2307/1885893](https://doi.org/10.2307/1885893)
- Kain, J. S. (2004). The Kain-Fritsch convective parameterization: An update. *Journal of Applied Meteorology*, 43(1), 170-181. doi:10.1175/1520-0450(2004)043<0170:TKCPAU>2.0.CO;2
- Larrance, R., Anastario, M., & Lawry, L. (2007). Health status among internally displaced persons in Louisiana and Mississippi travel trailer parks. *Annals of Emergency Medicine*, 49(5), 590-601. doi:10.1016/j.annemergmed.2006.12.004

- Ludwig, J., Duncan, G. J., Gennetian, L. A., Katz, L. F., Kessler, R. C., Kling, J. R., & Sanbonmatsu, L. (2013). Long-term neighborhood effects on low-income families: Evidence from moving to opportunity. *The American Economic Review*, *103*(3), 226–231. doi:10.1257/aer.103.3.226
- MacTavish, K. A. (2007). The wrong side of the tracks: Social inequality and mobile home park residence. *Community Development*, *38*(1), 74–91. doi:10.1080/15575330709490186
- MacTavish, K., Eley, M., & Salamon, S. (2006). Housing vulnerability among rural trailer-park households. *Georgetown Journal on Poverty Law and Policy*, *13*(1), 95–118.
- Mandelker, D. R. (2016). Zoning barriers to manufactured housing. *Urban Lawyer*, *48*(2), 233–278. Available from <https://ssrn.com/abstract=2828268>
- McCarty, W. P. (2010). Trailers and trouble? An examination of crime in mobile home communities. *Cityscape*, 127–144.
- McCarty, W. P. (2013). An exploratory examination of social ties and crime in mobile home communities. *SAGE Open*, *3*(4). doi:10.1177/2158244013512132
- Morello-Frosch, Rachel, Miriam Zuk, Michael Jerrett, Bhavna Shamasunder, and Amy D. Kyle. "Understanding the cumulative impacts of inequalities in environmental health: implications for policy." *Health affairs* 30, no. 5 (2011): 879-887.
- Munneke, H. J., & Slawson, V. C. (1999). A housing price model with endogenous externality location: A study of mobile home parks. *The Journal of Real Estate Finance and Economics*, *19*(2), 113–131. doi:10.1023/A:1007875205490
- Ong, P. M. & Ong, E. (2016). *Spatial inequality and gaps in expanded learning time opportunities*. Manuscript on hand, UCLA Center for Neighborhood Knowledge, University of California, Los Angeles.
- Payne-Sturges, D., & Gee, G. C. (2006). National environmental health measures for minority and low-income populations: tracking social disparities in environmental health. *Environmental Research*, *102*(2), 154–171. doi:[10.1016/j.envres.2006.05.014](https://doi.org/10.1016/j.envres.2006.05.014)
- Pendall, R., Hayes, C., George, A., McDade, Z., Dawkins, C., Jeon, J. S., ... Smart, M. (2014). *Driving to opportunity: Understanding the links among transportation access, residential outcomes, and economic opportunity for housing voucher recipients*. Washington, DC: Urban Institute. Retrieved from: <https://www.urban.org/sites/default/files/publication/22461/413078-Driving-to-Opportunity-Understanding-the-Links-among-Transportation-Access-Residential-Outcomes-and-Economic-Opportunity-for-Housing-Voucher-Recipients.PDF>
- Pieper, K. J., Krometis, L. A., Gallagher, D., Benham, B., & Edwards, M. (2015). Profiling private water systems to identify patterns of waterborne lead exposure. *Environmental science & technology*, *49*(21), 12697–12704. doi:10.1021/acs.est.5b03174

Richerson, J. L. (1950). *A critical analysis of zoning ordinances in Los Angeles County* (M.S.). University of Southern California, United States -- California. Retrieved from <https://search.proquest.com/pqdtglobal/docview/1647273953/abstract/48481FC168CD48CFPQ/6>

Romano, G., & Guerrini, A. (2011). Measuring and comparing the efficiency of water utility companies: A data envelopment analysis approach. *Utilities Policy*, 19(3), 202–209. doi:10.1016/j.jup.2011.05.005

Sampson, R. J. (2012). *Great American city: Chicago and the enduring neighborhood effect*. Chicago, IL: University of Chicago Press.

Sanders, W. (1998). *Manufactured housing: Regulation, design innovations, and development options*. Chicago, IL: American Planning Association. Retrieved from <https://www.planning.org/publications/report/9026827/>

Shen, G. (2005). Location of manufactured housing and its accessibility to community services: a GIS-assisted spatial analysis. *Socio-Economic Planning Sciences*, 39(1), 25–41. doi:10.1016/j.seps.2003.10.008

Southern California Association of Governments. (2009). *Countywide zoning*. Available from <https://egis3.lacounty.gov/dataportal/2012/04/10/countywide-zoning/>

Salamon, S., & MacTavish, K. (2017). *Singlewide: Chasing the American Dream in a Rural Trailer Park*. Cornell University Press.

Taylor, B. D., & Ong, P. M. (1995). Spatial mismatch or automobile mismatch? An examination of race, residence and commuting in US metropolitan areas. *Urban studies*, 32(9), 1453–1473. doi:[10.1080/00420989550012348](https://doi.org/10.1080/00420989550012348)

Tremoulet, A. (2010). *Policy responses to the closure of manufactured home parks in Oregon*. Portland, OR: Portland State University. Retrieved from http://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1303&context=open_access_etds

Wallis, A. (1991). *Wheel estate: The rise and decline of mobile homes*. New York, NY: Oxford University Press.

Wilson, B. (2012). An examination of electricity consumption patterns in manufactured housing units. *Housing Policy Debate*, 22(2), 175–199. doi:[10.1080/10511482.2011.648204](https://doi.org/10.1080/10511482.2011.648204)

Wubneh, M., & Shen, G. (2004). The impact of manufactured housing on adjacent residential property values: A GIS approach based on three North Carolina counties. *Review of Urban & Regional Development Studies*, 16(1), 56–73. doi:10.1111/j.1467-940X.2004.00080.x

U.S. Census Bureau. (2011). 2011 American Housing Survey National Public Use File. Retrieved from: <http://www.census.gov/programs-surveys/ahs.html>

U.S. Census Bureau (2016). 2016 American Community Survey 1-year Estimates. Retrieved from: <https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>

U.S. Environmental Protection Agency. (2013, July). Smart location database version 2.0. Retrieved from: <https://www.epa.gov/smartgrowth/smart-location-mapping>