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Factors Affecting Development Decisions and Construction Delay of Housing in Transit-Accessible and Jobs-Rich Areas in California




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RESEARCH REPORT

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# Factors Affecting Development Decisions and the Approval Process for Housing Projects in Transit-Accessible and Jobs-Rich Areas in Southern California

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**16. Abstract**

Recent state legislation addresses California's housing affordability crisis by encouraging new development in transit-accessible and/or jobs-rich areas. But policymakers lack key information about the effects of laws and plans on developers' decisions about whether and where to build housing, and factors contributing to delays in receiving government development approvals in target areas. Drawing on a unique dataset detailing all residential projects of five units or more that were approved from 2014 through 2017 in selected California jurisdictions, this project analyzes how project attributes and transportation-related factors affected infill housing construction. We find that in cities with extensive transit infrastructure, new projects were generally located in parts of the city with high proximity to transit, but that proximity to rail stops or high frequency bus stops was not associated with extreme delays in project approval compared to all projects in general. The only factors related to extreme delay are the percentage of land within a half mile radius of dedicated single-family housing and whether a multiunit project required a rezoning or general plan amendment, the latter of which is associated with 326% increase in the odds of a project being extremely delayed. Our findings suggest that cities could expedite transit-accessible housing development by ensuring that general plans and zoning accommodate multifamily development near transit.

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# Factors Affecting Development Decisions and the Approval Process for Housing Projects in Transit-Accessible and Jobs-Rich Areas in Southern California

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# Executive Summary

# Executive Summary

Recent state legislation has attempted to address California's housing affordability crisis by encouraging new development in transit-accessible and/or jobs-rich areas. But policy makers have limited information about (1) the effects of laws and plans on developers' decisions regarding whether and where to build housing; and (2) factors contributing to delays in receiving development entitlements and building approval in target areas. Moreover, development and entitlement processes vary substantially by jurisdiction and local context.

Local preferences about new housing are mediated through land-use law, which governs what is legally permissible to build (through zoning district designations) and what is required in the approval process for new developments (e.g., number of hearings). Such land-use laws can affect residential development, as delays in construction can be costly and lot and building size requirements in zoning regulations can affect the feasibility of development. Although it is widely recognized that regulatory requirements can affect housing development, there is little evidence concerning the relationship between specific requirements and housing outcomes. In addition, California has adopted numerous laws in recent years intended to increase housing production in ways that will put housing in places that are accessible to jobs, but the evidence concerning the impacts of these laws on housing development remains largely anecdotal.

This project investigates the factors that affect development approval decisions by using the Comprehensive Assessment of Land-Use Entitlements (CALES) dataset — a unique dataset of all residential projects of five units or more that received development entitlements from 2014 through 2017 in selected California jurisdictions. The CALES dataset includes data on over 1,000 projects, with over 100 variables for each project. Using descriptive statistics and multivariate modeling, we examined the factors associated with multifamily development approval delays for six cities in Southern California: Inglewood, Long Beach, Los Angeles, Pasadena, Redondo Beach, and Santa Monica.

In cities with extensive transit infrastructure, new projects were generally located in parts of the city with high proximity to transit. Proximity to rail stops or high frequency bus stops was not a significant determinant of extreme delay in project approvals, but there is one factor under governmental control that exerts significant influence over extreme delays: whether a project requires a rezoning or a general plan amendment.

Cities could thus potentially expedite transit-accessible housing development by ensuring that general plans and zoning accommodate multifamily development near transit. This finding provides empirical support for recent efforts such as Los Angeles's Transit Oriented Communities (TOC) program, which allows transit-proximate projects to receive ministerial approvals coupled with density bonuses beyond what is allowed by the underlying zoning ordinance.

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# Introduction

In California, state laws, as well as regional transportation and sustainable development plans, call for substantial new development in transit-accessible and job-rich areas to address chronic housing shortages, expand affordable housing, and reduce greenhouse gas emissions. But policy makers have limited information about (1) the effects of laws and plans on developers' decisions regarding whether and where to build housing; and (2) factors contributing to delays in receiving development entitlements and building in target areas. California Senate Bill 375 (SB 375) compels metropolitan planning organizations (MPOs) to "prepare and adopt a Sustainable Communities Strategy that sets forth a forecasted regional development pattern which, when integrated with the transportation network, measures, and policies, will reduce greenhouse gas emissions (GHG) from automobiles and light duty trucks" (Southern California Association of Governments, 2020, p. 5). Some MPOs, such as the Southern California Association of Governments (SCAG), also operate as Councils of Governments (COGs), which have a statutory responsibility to allocate housing units as part of California's Regional Housing Needs Assessment process. These housing unit allocations must address "imbalance[s] in jobs and housing, reduced mobility, urban sprawl, [and] excessive commuting" (Cal. Gov. Code, §65589.5(a)(1)(C)). Because development and entitlement processes vary substantially by jurisdiction and local context, policy makers require more detailed information about the factors that affect development decisions and construction delays in jobs-rich and transit-accessible areas.

This project investigates the factors that affect development decisions and delays in project approvals by using the Comprehensive Assessment of Land-Use Entitlements (CALES) dataset, a unique resource including all residential projects of five units or more that received government entitlements for construction from 2014 through 2017 in selected California jurisdictions. In this report, we analyze data for six cities in Southern California: Inglewood, Long Beach, Los Angeles, Pasadena, Redondo Beach, and Santa Monica. The CALES dataset includes data on more than 1,000 projects, with over 100 variables for each project, providing a rare opportunity to examine development decisions and delays. The variables include relevant regulatory requirements and environmental reviews, the dates of permit applications and decisions, the land use prior to the project proposal, and aspects of any relevant litigation. Each project in the dataset is geocoded, enabling us to create a variety of transit accessibility measures.

We examine factors that (1) affect decisions about whether and where to build infill projects in job-rich and transit-accessible locations, and (2) contribute to entitlement delays. We first identify how the locations of projects are spatially associated with transit systems and other transportation infrastructure. Then, using descriptive statistics and multivariate modeling, we examine developer decisions, identifying how project-level attributes and contextual variables, including those related to transportation, affect those decisions. We also conduct a systematic comparison of permitting timelines among otherwise comparable projects with different degrees of transit availability or job accessibility, along with multivariate modeling to assess the determinants of delay in project approvals.

# Background

California's housing affordability problems are well known. Between 2018 and 2020, the state had an average official poverty rate of 11 percent (the 21st highest among U.S. states), but its supplemental poverty rate, which accounts for the cost of housing, is 15.4 percent — the highest in the nation (U.S. Census Bureau 2021). As of 2021, the median home price in the state was $817,950, more than twice the U.S. median of $357,900 (California Association of Realtors 2021).

The solution to the state's housing affordability crisis is also widely recognized to involve building more market-rate housing and more below-market-rate (BMR) housing in areas where demand for housing is high. Yet this solution is often politically challenging because areas where demand for housing is high are areas where people already live, and as a result where opposition to new housing can be strong. It is further complicated by concerns that particularly vulnerable communities may be subject to displacement in areas with the best transit infrastructure, due to the discriminatory impacts of myriad prior decisions and policies, including those regarding mortgage finance, zoning, and the siting of public works projects such as highways and rail stations.

Local preferences about new housing are mediated through land-use law, which governs what is legally permissible to build. Land-use law involves both substantive and procedural components. The substantive components of land-use law include zoning district designations, which determine the permissible uses in a given area (e.g., multifamily housing, single family housing, commercial, industrial). Zoning district designations typically also specify dimensional requirements, such as building heights and setbacks. Such requirements can affect the viability of housing development projects because they can determine the number of units that may be built and, therefore, the potential profits from development. Additional substantive requirements can include, for example, minimum parking requirements which can also affect the viability of residential development projects by adding to construction costs. The procedural components of land-use law govern features of the development process such as the number and type of approvals and hearings required for a development project. As with the substantive components of land-use law, the procedural components can also affect residential development, because the costs associated with delay and uncertainty may deter developers from undertaking projects.

Although it is widely recognized that regulatory requirements can affect housing development, there is little evidence concerning the relationship between specific requirements and housing outcomes. In large part, this lack of evidence results from limited data. Local data collection practices vary dramatically, but in many cases the quality of relevant data is low (Gualco-Nelson, O'Neill, and Biber 2019; Marantz 2021). Moreover, even when local data are of high quality, variations among jurisdictions can hamper analyses at the regional, statewide, or national scale (Lewis and Marantz 2019).

California has adopted numerous laws in recent years intended to increase housing production in ways that will put housing in places that are accessible to jobs, but the evidence concerning the impacts of these laws on housing development remains largely anecdotal. This report addresses that problem by drawing on our unique dataset of six Southern California cities to separate various potential determinants of the duration of approval processes.

# Data

We draw on an array of data concerning transit and jobs accessibility, demographics, and project approvals. This section describes the datasets that we use: the Comprehensive Assessment of Land Use Entitlements (CALES); data from SCAG concerning the location of transit stops and land use patterns; data from the U.S. Environmental Protection Agency concerning commute times; and demographic data from the American Community Survey (ACS).

## Comprehensive Assessment of Land Use Entitlements[1]

The CALES is a project encompassing both quantitative data (used in this report) and qualitative data (i.e., interviews and legal analyses). The quantitative data includes detailed histories of the approval processes for development projects including five or more residential units. As of the date of this report, CALES is restricted to a sample of cities in high-cost metropolitan areas with the potential for infill development. For their initial sample, the CALES researchers selected charter cities of different sizes in high-cost metropolitan statistical areas, as identified by the California Legislative Analyst's Office (State of California, Legislative Analyst's Office 2015). For each metropolitan statistical area, the researchers included the largest city, along with smaller nearby jurisdictions that differed from each other socioeconomically, had a population of at least 50,000, and had a land area of at least five square miles. Within the region covered by the Southern California Association of Governments, the first iteration of the CALES dataset covers six cities: Inglewood, Long Beach, Los Angeles, Pasadena, Redondo Beach, and Santa Monica. For each of these cities, CALES includes data for all development projects including five or more residential units that received entitlements from 2014 through 2017. In the remainder of this report, we describe such projects as "discretionary CALES projects."

The meaning of the term **entitlement** in the context of California land-use law hinges on the distinction between **discretionary** and **ministerial** review processes. A discretionary review process provides one or more government agencies with the authority to deny a development application, even if the proposed project conforms to the density and use requirements imposed by the applicable zoning ordinance. If the required review is ministerial, then the application must be approved so long as it complies with applicable objective standards. An entitlement marks the point at which a project proponent has completed all applicable discretionary review requirements. Standing alone, an entitlement does not authorize the construction of a project. The project proponent must still obtain construction permits (e.g., a building permit), but such permits are subject to ministerial review rather than discretionary review.

Although the large majority (76%) of the 1,153 CALES projects analyzed in this report were subject to discretionary review, 272 projects in Los Angeles were subject only to ministerial review (Table 1). In these

[1] This section draws on section III of O'Neill et al. (2021).

cases, there is no final entitlement to measure, so the CALES dataset identifies projects that received a building permit from 2014 through 2017. In the remainder of this report, we describe such projects as "ministerial CALES projects." As noted above, for entitled projects (i.e., those subject to discretionary review), the final action measured in CALES is the entitlement itself, which precedes issuance of a building permit. Thus, the data for ministerial CALES projects is not directly comparable to the data for discretionary CALES projects.

For each project in the dataset, CALES compiles all approvals (to the extent the information is publicly available) from the initial application to the final entitlement (or, in the case of projects subject only to ministerial review, the building permit). The data come from online data portals and GIS files provided by jurisdictions, combined with reviews of project approval documents, tax assessor records, and minutes from city council and planning commission meetings. In addition, CALES includes data on administrative appeals concerning project approvals and litigation data gathered from court records.

**Table 1. CALES Projects and Units, By Jurisdiction and Project Type**

| | Projects | Units |
|---|---|---|
| Inglewood (discretionary) | | |
| Multifamily | 4 | 568 |
| Long Beach (discretionary) | | |
| Multifamily | 25 | 2,433 |
| Single-family detached | 2 | 171 |
| Los Angeles (discretionary) | | |
| Mixed multifamily and single-family detached | 2 | 705 |
| Multifamily | 588 | 57,081 |
| Single-family attached | 150 | 2,186 |
| Single-family detached | 45 | 1,289 |
| Los Angeles (ministerial) | | |
| Multifamily | 268 | 4,353 |
| Single-family attached | 4 | 20 |
| Pasadena (discretionary) | | |
| Multifamily | 33 | 1,506 |
| Single-family attached | 4 | 102 |
| Redondo Beach (discretionary) | | |
| Multifamily | 7 | 211 |
| Santa Monica (discretionary) | | |
| Multifamily | 19 | 1,429 |
| Single-family attached | 2 | 18 |

## Transit and Job Accessibility

Our main measures of transit accessibility are the number of rail stops and high-frequency bus stops within a 0.5-mile radius of either a CALES project (for the first set of regression models) or the centroid of each block group in the study cities (for the second set of regression models) as of 2016. These data come from SCAG. We define a bus stop as "high-frequency" if at least one bus with an AM or PM headway of fifteen minutes or less stops there based on General Transit Feed Specification (GTFS) data. As an alternative specification for the second set of models, we also measure the number of rail stops and high-frequency bus stops within each block group (rather than within a radius of the block group centroid). Our measure of job accessibility is the number of jobs within a 45-minute transit commute of a project's block group based on data from the U.S. Environmental Protection Agency's Smart Location database.

## Land Use

We identify land use from SCAG's 2016 parcel-level classification of existing land use. Our regression models include block-group level measures of the percentages of land used for: single-family housing; multi-family housing; commercial development; facilities (e.g., government offices, educational institutions); industry; and open space.

## Demographics

Our demographic measures, drawn from the 2015-2019 ACS, include the percentages of the population identifying as Asian, Black or African American, Hispanic or Latino, and non-Hispanic White in each block group. We also measure median household income at the block group-level and the percentage of persons in owner-occupied housing units. Our measures of housing stock include median building age by census block (or, alternatively, dichotomous variables indicating the era during which the median building was constructed), as well as the percentage of housing units in each block group that are occupied.

# Demographics, Transit Accessibility, and New Development in the Six Study Cities

## Descriptive Statistics

The six study cities vary along a variety of demographic attributes (Table 2Table 2). They range in population from Los Angeles, with nearly four million inhabitants, to Redondo Beach, with a population of 67,700. In addition, the racial and ethnic composition of the cities varies significantly. For example, roughly 41 percent of Inglewood residents identify as Black or African American, compared with three percent in Redondo Beach and four percent in Santa Monica. Citywide median household incomes also vary significantly, ranging from $50,335 in Inglewood to $112,271 in Redondo Beach. There is a noticeable variation in the Gini coefficient, which is a measure of income heterogeneity (i.e., inequality), with a higher value (close to one) indicating more heterogeneity. Specifically, compared with the other four cities, Santa Monica and Los Angeles have more income heterogeneity — a mix of lower- and upper-income households. The relatively low Gini coefficients for Inglewood and Redondo Beach indicate that Inglewood has more uniformly lower- and moderate-income households, while Redondo Beach has more uniformly upper-income households.

**Table 2. Demographics and Transit Access by Study City**

| | Inglewood | Long Beach | Los Angeles | Pasadena | Redondo Beach | Santa Monica |
|---|---|---|---|---|---|---|
| Total Population | 110,327 | 468,883 | 3,959,657 | 141,246 | 67,700 | 92,078 |
| % Asian | 2 | 13 | 11 | 17 | 13 | 10 |
| % Black / African American | 41 | 12 | 9 | 9 | 3 | 4 |
| % Hispanic / Latino | 50 | 42 | 49 | 35 | 17 | 16 |
| % non-Hispanic White | 4 | 28 | 28 | 35 | 60 | 64 |
| Median household income | 50,335 | 60,551 | 58,385 | 78,941 | 112,271 | 93,865 |
| Gini coefficient | 0.45 | 0.47 | 0.53 | 0.51 | 0.42 | 0.54 |
| Land area (sq. mi) | 9 | 51 | 469 | 23 | 6 | 8 |
| Density (people per sq. mi.) | 12,167 | 9,249 | 8,444 | 6,152 | 10,924 | 10,942 |
| High-frequency bus stops (N) | 57 | 56 | 2,100 | 16 | 0 | 66 |
| Pop. per hi-freq. bus stop | 1,936 | 8,373 | 1,886 | 8,828 | NA | 1,395 |
| Rail stops (N) | 0 | 8 | 49 | 6 | 0 | 3 |
| Pop. per rail stop | NA | 58,610 | 80,809 | 23,541 | NA | 30,693 |

*Sources*: US Census Bureau (n.d.-c); Southern California Association of Governments (n.d.-b; n.d.-c).
Note: Demographic variables measured as of the 2015-2019 American Community Survey; Transit variables measured as of 2016.

As Table 3Table 3 illustrates, the six cities also vary significantly in terms of bus and rail accessibility. Inglewood, Los Angeles, and Santa Monica offer roughly comparable levels of high-frequency bus service, based on their populations and number of high-frequency bus stops. Long Beach and Pasadena have more limited high-frequency bus access, and Redondo Beach has none. By the same metric, Pasadena provides the highest level of rail service, followed in order by Santa Monica, Long Beach, and Los Angeles. Inglewood and Redondo Beach had no rail stations as of 2016.

To understand how the accessibility of new residential development projects to transit varies across cities, we compared block groups with CALES projects of five units or more approved during the study period to block groups without any such projects. Census block groups generally contain 600 to 3,000 people and are the smallest census aggregation level for which socioeconomic data such as median household income is reported (U.S. Census Bureau n.d.-a).[2] The territorial size of block groups varies significantly — block groups at the 99th

[2] Census blocks "are statistical areas bounded by visible features, such as streets, roads, streams, and railroad tracks, and by nonvisible boundaries, such as selected property lines and city, township, school district, and county limits and short line-of-sight extensions of streets and roads." Several contiguous block groups typically make up individual census tracts which "are small, relatively permanent

percentile of size in the City of Los Angeles are roughly 1.75 square miles, whereas block groups at the 1st percentile are about 0.02 square mile, and the median block group size in the City of Los Angeles is 0.1 square mile. Because most block groups are quite small, for each block group we used a geographic information system (GIS) to create a circle with a 0.5-mile radius around the centroid of the block group. This radius is generally viewed as the maximum distance that residents can be expected to walk to a transit station.

Table 3 shows that new residential projects of five units or more are generally concentrated in areas with relatively good access to high-frequency bus stops and to rail stops, as compared with other areas throughout the study cities. For example, in Inglewood, block groups with such projects were within walking distance of 10 high-frequency bus stops, on average. By contrast, block groups without such projects were within walking distance of about five high-frequency bus stops, on average. This general pattern persists across all the study cities except for Redondo Beach, which had no block groups near high-frequency bus or rail stops. As expected, the bus accessibility of new developments is generally higher for cities with greater bus accessibility overall. A similar pattern is evident in the four cities with rail stops. In short, among the cities with good transit service availability, new residential development projects of five units or more are concentrated in relatively transit-accessible areas within the cities.

statistical subdivisions of a county or equivalent entity that … generally have a population size between 1,200 and 8,000 people, with an optimum size of 4,000 people" (U.S. Census Bureau n.d.-a).

**Table 3. Block Group Transit Accessibility by City**

| | | High frequency bus stops | | Rail stops | |
|---|---|---|---|---|---|
| | BGs (N) | Mean | Med. | Mean | Med. |
| Inglewood | | | | | |
| BGs without projects | 67 | 5.1 | 4.0 | 0.0 | 0.0 |
| BGs with projects | 3 | 10.0 | 9.0 | 0.0 | 0.0 |
| Long Beach | | | | | |
| BGs without projects | 314 | 1.4 | 0.0 | 0.2 | 0.0 |
| BGs with projects | 15 | 3.4 | 3.0 | 1.5 | 1.0 |
| Los Angeles | | | | | |
| BGs without projects | 1,883 | 6.0 | 4.0 | 0.1 | 0.0 |
| BGs with projects | 624 | 10.1 | 7.0 | 0.3 | 0.0 |
| Pasadena | | | | | |
| BGs without projects | 82 | 0.5 | 0.0 | 0.2 | 0.0 |
| BGs with projects | 24 | 2.5 | 2.0 | 0.8 | 1.0 |
| Redondo Beach | | | | | |
| BGs without projects | 43 | 0.0 | 0.0 | 0.0 | 0.0 |
| BGs with projects | 6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Santa Monica | | | | | |
| BGs without projects | 60 | 6.2 | 4.0 | 0.2 | 0.0 |
| BGs with projects | 14 | 7.4 | 8.5 | 0.5 | 0.0 |

*Sources:* CALES; Southern California Association of Governments (n.d.-b; n.d.-c).

Figure 1Figure 1 and Figure 2 show the distribution of ministerial and discretionary CALES projects within the six study cities and emerging hotspots where these projects are spatiotemporally clustered. Consistent with our findings in Table 3Table 3, the hotspots (clusters of CALES projects) are found in locations with high transit accessibility, when identified using 0.5×0.5-mile grid cells and 3-month time intervals (from the first quarter of 2014 to the last quarter of 2017). More specifically, the maps show that new residential development projects of five units or more are concentrated in/near (1) Hollywood – Koreatown – Downtown LA, the hub of the LA transit system, (2) North Hollywood where both the B (Red) and G (Orange) lines are available, and (3)

Westwood – West Los Angeles – Santa Monica where transit accessibility has continued to improve with the E (Expo) line and the future D (Purple) line extensions. None of these hotspots, however, show temporal persistence or intensification, suggesting that it is uncommon for these small areas (0.5×0.5mile grid cells) to receive new projects again and again over a long time. In other words, additions to multifamily housing supply tend to be sporadic at this geographic scale.

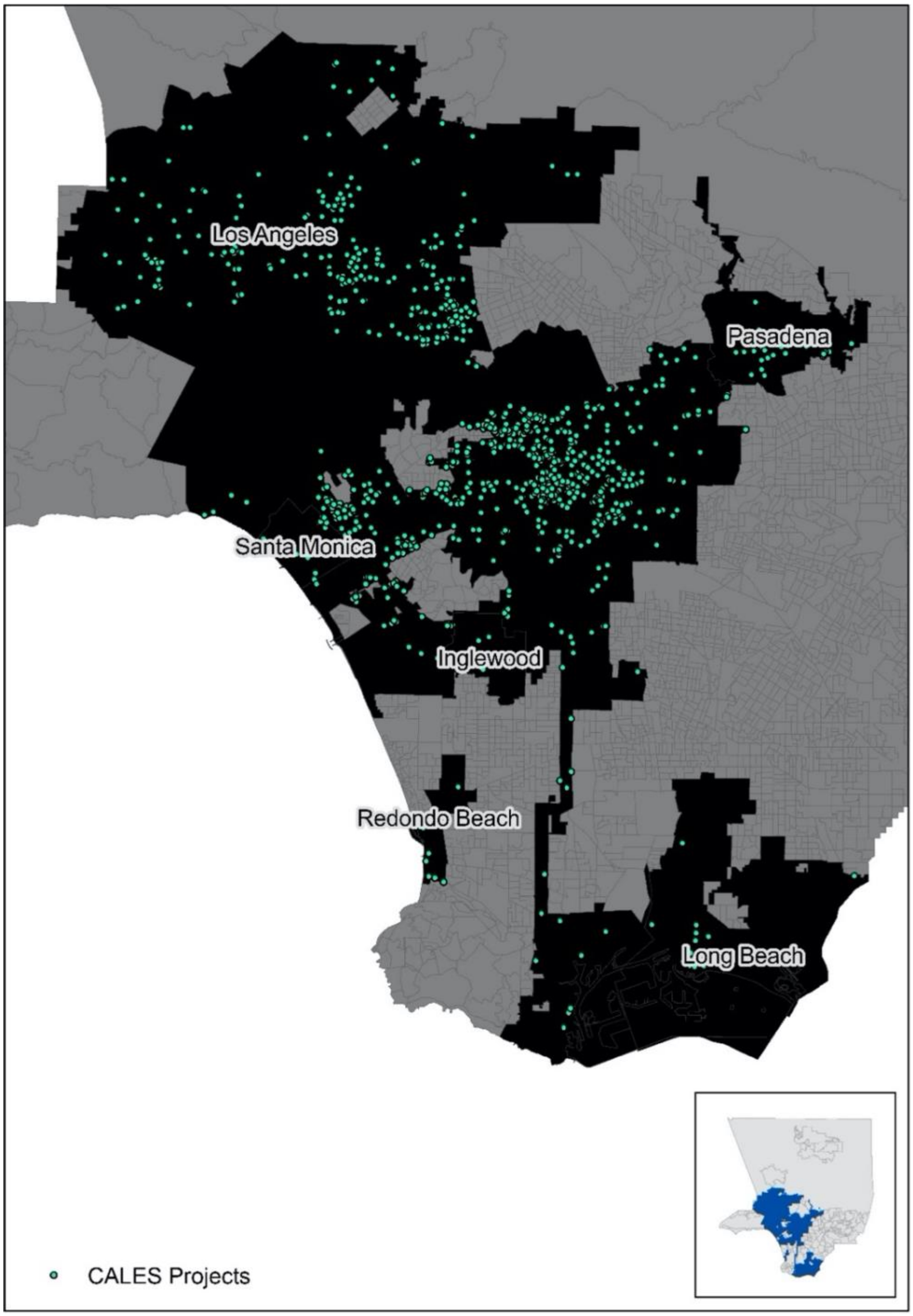
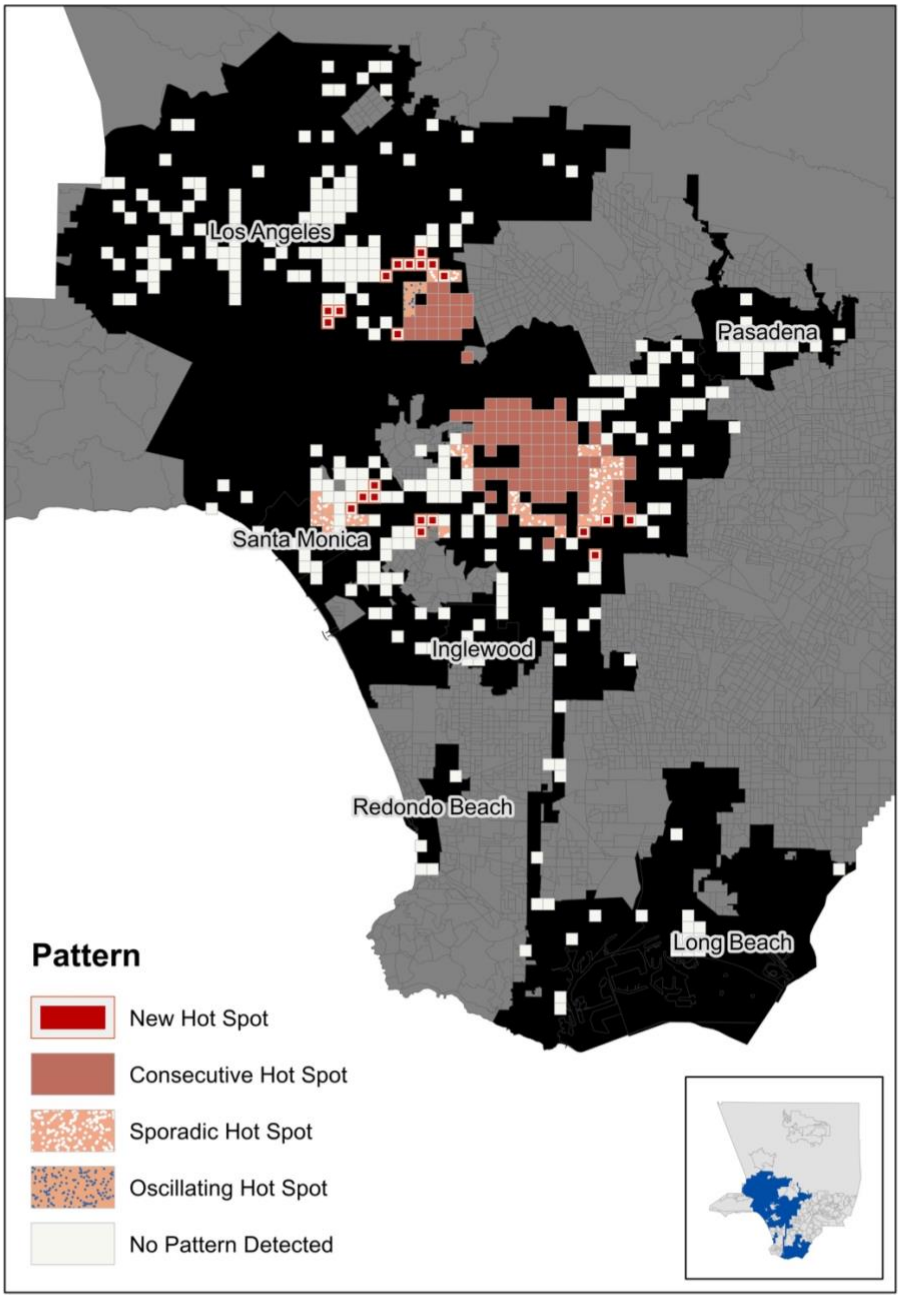



**Figure 1. CALES Projects in Study Cities**




*Note:* A **consecutive hot spot** is a location that was continuously a hot spot through the last quarter of 2017, but was a hot spot for less than 90% of the time (from 2014 to 2017); a **sporadic hot spot** is location that is an on- and off-again hot spot less than 90% of the time period (from 2014 to 2017), with no history of being a cold spot; a **new hot spot** is a location that is a new hot spot for the last quarter of 2017 and has not been a hot spot previously; an **oscillating hot spot** is a location that was historically a cold spot, but turned into a hot spot in the last quarter of 2017. Definitions based on ESRI (2021).

**Figure 2. Emerging Hot Spots Analysis**

## Regression Model Overview

Because these summary univariate statistics and hotspot maps do not account for sources of variation among block groups, such as demographics and existing land uses, we conducted a series of multivariate regressions to incorporate a wider variety of attributes that might affect the location and quantity of new residential development. These regression models focus on three separate outcomes: (1) Whether *any* development projects of five units or more were permitted in a given block group in the study area; (2) the number of **projects** of five units or more permitted in a given block group; and (3) the number of **units** in projects of five units or more permitted in a given block group. The first model uses logistic regression, which is appropriate when the dependent variable is a binary indicator, and the second and third models use negative binomial regression, which can be appropriate when the dependent variable is a count variable (rather than a dichotomous variable or a continuous variable).

The control variables include various indicators of block group-level demographics, land use, and transit accessibility, detailed in Table 4. Since development decisions can also be influenced by the characteristics of surrounding areas beyond block group boundaries, we additionally use a set of spatially lagged variables that capture the median household income, housing occupancy, and land use composition in adjacent areas for each block group. Although these block group-level regression models are not without limitations,[3] they provide an opportunity to get a sense of what types of neighborhoods were more likely to receive housing development projects of five units or more during the study period.

[3] Alternatively, individual developers' location decisions can be analyzed by employing McFadden's (1974) discrete choice modeling approach. Spatial interdependence and/or heterogeneity can also be treated more explicitly.

**Table 4. Variables for Block Group Regression Models**

| Variable | Definition | Source |
|---|---|---|
| % Asian | Percentage of the population identifying as Asian | (1) |
| % Black / African-American | Percentage of the population identifying as Black or African American | (1) |
| % Hispanic / Latino | Percentage of the population identifying as Hispanic or Latino | (1) |
| % non-Hispanic White | Percentage of the population identifying as non-Hispanic White | (1) |
| % multifamily residential | Percentage of land area consisting of multifamily residential uses | (2) |
| % single family residential | Percentage of land area consisting of single-family residential uses | (2) |
| % commercial | Percentage of land area consisting of commercial uses | (2) |
| % facilities | Percentage of land area consisting of facilities | (2) |
| % industrial | Percentage of land area consisting of industrial uses | (2) |
| % open space | Percentage of land area consisting of open space | (2) |
| Med. year housing built | Dichotomous variable indicating period during which the median-aged housing unit was constructed: (pre-1940, 1940–1959, 1960–1979, 1980–1999, or post-1999) | (1) |
| Med. HH income (/1000) | Median household income (divided by 1,000) | (1) |
| % occupied | Percentage of housing units that are occupied | (1) |
| Jobs w/in 45-minute transit commute (/1000) | Number of jobs within a 45-minute commute via transit | (3) |
| # rail stations | Number of rail stations within a 0.5-mile radius of the block groiup centroid | (4) |
| # high frequency bus stops | Number of high frequency bus stops within a 0.5-mile radius of the block groiup centroid | (5) |
| % owner-occupied | Percentage of occupied housing units that are owner-occupied | (1) |
| City | City where block group is located | (6) |
| | | |

*Sources:* (1) U.S. Census Bureau (n.d.-b); (2) Southern California Association of Governments (n.d.-a); (3) U.S. Environmental Protection Agency (2013); (4) Southern California Association of Governments (n.d.-b); (5) Southern California Association of Governments (n.d.-c); (6) Missouri Census Data Center (n.d.).

## Model Results

The logistic regression analysis (Table 5, column (1)) reveals the probability (OR, or odds ratio) that a block group which contained at least one permitted housing project was highly associated with several neighborhood socio-demographic indicators and measures of housing vintage. (The statistical significance or strength of the relationship is indicated by the number of asterisks (*).) For example, a one percentage point increase in the proportion of owner-occupied housing *(% owner-occupied*) was associated with a decrease of two percent (1-.98 x 100) in the odds of having at least one permitted project in the block group, which is substantial given that the block group-level percentage of owner-occupied housing varied considerably across blocks groups in the study region (mean = 41.25, standard deviation = 27.98).

## Table 5. Block Group Regression Models

| Characteristic | (1) OR[1,2] | (1) SE[2] | (2) IRR[1,2] | (2) SE[2] | (3) IRR[1,2] | (3) SE[2] |
|---|---|---|---|---|---|---|
| % Asian | 0.98 | 0.016 | 0.99 | 0.012 | 0.94* | 0.025 |
| % Black / African-American | 0.95** | 0.016 | 0.97* | 0.013 | 0.92*** | 0.025 |
| % Hispanic / Latino | 0.96** | 0.015 | 0.98 | 0.012 | 0.93** | 0.023 |
| % non-Hispanic White | 0.97* | 0.015 | 0.99 | 0.012 | 0.93** | 0.024 |
| % multifamily residential | 1.00 | 0.006 | 1.00 | 0.005 | 0.99 | 0.009 |
| % single family residential | 1.00 | 0.006 | 1.00 | 0.005 | 0.98* | 0.009 |
| % commercial | 0.99 | 0.007 | 1.00 | 0.005 | 1.03** | 0.011 |
| % facilities | 0.99 | 0.007 | 0.99 | 0.005 | 1.00 | 0.011 |
| % industrial | 1.00 | 0.008 | 1.00 | 0.006 | 1.00 | 0.013 |
| % open space | 0.99 | 0.008 | 0.99 | 0.007 | 0.98* | 0.012 |
| Med. year housing built | | | | | | |
| pre-1940 | — | — | — | — | — | — |
| 1940-1959 | 1.48* | 0.164 | 1.32* | 0.137 | 1.48 | 0.241 |
| 1960-1979 | 2.25*** | 0.171 | 1.72*** | 0.139 | 1.95* | 0.268 |
| 1980-1999 | 1.99** | 0.255 | 1.97*** | 0.196 | 1.50 | 0.423 |
| post-1999 | 5.13*** | 0.459 | 4.43*** | 0.288 | 4.48 | 0.802 |
| Med. HH income (/1000) | 1.00 | 0.003 | 1.00 | 0.002 | 0.99 | 0.004 |
| % occupied | 0.99 | 0.009 | 0.98* | 0.007 | 0.97* | 0.015 |
| Jobs w/in 45-minute transit commute (/1000) | 1.00* | 0.000 | 1.00*** | 0.000 | 1.00** | 0.000 |
| # rail stations | 1.20 | 0.112 | 0.94 | 0.080 | 0.97 | 0.179 |
| # high frequency bus stops | 1.00 | 0.006 | 1.01 | 0.005 | 1.01 | 0.011 |
| % owner-occupied | 0.98*** | 0.004 | 0.98*** | 0.003 | 1.00 | 0.006 |
| % multifamily residential (lag) | 1.01 | 0.006 | 1.00 | 0.005 | 1.00 | 0.009 |
| % single family residential (lag) | 1.00 | 0.005 | 1.00 | 0.004 | 0.99 | 0.007 |
| % commercial (lag) | 1.02** | 0.007 | 1.03*** | 0.006 | 1.04** | 0.012 |
| % facilities (lag) | 0.99 | 0.007 | 0.99 | 0.006 | 1.00 | 0.011 |
| % industrial (lag) | 1.00 | 0.008 | 1.00 | 0.006 | 1.01 | 0.012 |
| % open space (lag) | 1.00 | 0.006 | 1.01 | 0.005 | 0.99 | 0.009 |
| Med. HH income (/1000, lag) | 1.00** | 0.000 | 1.00*** | 0.000 | 1.00 | 0.001 |
| % occupied (lag) | 1.03 | 0.020 | 1.01 | 0.016 | 1.02 | 0.031 |
| City | | | | | | |
| Inglewood | — | — | | | | |
| Long Beach | 1.61 | 0.720 | | | | |
| Los Angeles | 5.23** | 0.624 | | | | |
| Pasadena | 4.69* | 0.685 | | | | |
| Redondo Beach | 1.48 | 0.806 | | | | |
| Santa Monica | 1.16 | 0.715 | | | | |
| No. Obs. | 2,753 | | 2,753 | | 2,753 | |

[1] *p<0.05; **p<0.01; ***p<0.001
[2] OR = Odds Ratio, SE = Standard Error, IRR = Incidence Rate Ratio

Note: (1) is a logistic model of the probability that a block group in the study cities has at least one CALES project; (2) and (3) are negative binomial models examining factors associated with, respectively, the number of projects and the number of units in a block group. The sample excludes 299 block groups for which the *Jobs w/in 45-minute transit commute* variable is missing from the EPA data.

This result is in line with Fischel's (2001) homevoter hypothesis and subsequent studies, such as Gabbe (2018), which suggest that it is more challenging to lift zoning restrictions and provide multi-family housing units in areas with a high percentage of homeowners. While it has often been assumed that restrictive land use controls are prevalent in suburban communities, recent studies have reported that large cities, like Los Angeles, have become similarly restrictive (Mangin 2014; Been 2018). Our finding here may indicate that, within large cites, some neighborhoods tend to be much less receptive to new multifamily housing, and this variation is highly associated with the percentage of homeowners. Such a finding is consistent with Marantz and Lewis (2021), who find that, after controlling for jurisdiction size and other variables, the proportion of owner-occupied housing in a tract is negatively associated with multifamily housing development.

The ethno-racial composition of block groups is also related to the presence of projects and the number of units. For example, a one percentage point increase in the percentage of the population identifying as Black or African American (*% Black / African American*) is associated with a five percent decrease in the odds of having at least one permitted project in the block group. A one percentage point increase in the percentage of the population identifying as Hispanic or Latino (*% Hispanic / Latino*) is associated with a four percent decrease, and a one percentage point increase in the percentage of the population identifying as non-Hispanic White (*% non-Hispanic White*) is associated with a three percent decrease.

Projects were much more likely to be permitted in block groups where most housing was developed relatively recently. For example, the odds of at least one project being permitted in a block group where the median housing unit was built after 1999 (*post-1999*) were 513% higher than in block groups where the median housing unit was built before 1940. This finding indicates that multi-family housing development projects tended to be located in neighborhoods with more recently (re)developed housing units. It is consistent with the findings from a national study indicating that "[c]ompared with [census] tracts in which most housing units were built after 1999, tracts with older housing stock accommodated fewer multifamily housing units" (Marantz and Lewis 2021, 24).

Median household income has a statistically insignificant relationship with the presence of CALES projects. It is important to note, however, that median household income in the surrounding areas (*Med. HH income (/1000, lag)*) showed a positive association (based on the coefficient, rather than the odds ratio), indicating that CALES projects were more likely to be found in areas near relatively more affluent neighborhoods, although they tended to not be placed within those relatively affluent neighborhoods with any higher probability.

Similar to median household income, none of the six land use variables in the logistic regression model showed a statistically significant coefficient. The spatial lag of the percentage of land uses dedicated to commercial uses (*% commercial (lag)*), however, exhibited a positive association with the presence of a project. The spatial lag variables capture the land use composition of adjacent block groups sharing an edge or side, so that the regression models take into account the immediate surroundings of each block group. Thus, all other things being equal, the chance of having CALES projects was higher in areas near commercial districts. Transit variables — *# rail stations* and *# high frequency bus stops* — did not show a strong relationship with the presence of CALES projects at the block group level. However, a significant, positive association was detected for *Jobs* *w/in 45-minute transit commute* (again, based on the coefficient rather than the odds ratio), indicating that multi-family housing projects were more likely to be present in areas where job accessibility via transit was relatively better.

City dummy variables, included to control for variation across jurisdictions, showed that the probability of having at least one CALES project was significantly higher in Los Angeles and Pasadena block groups, compared to the baseline (Inglewood). Redondo Beach, Santa Monica, and Long Beach, however, did not show such a statistically significant difference.

The results from the negative binomial models (Table 5Table 5, columns (2) and (3)) were largely consistent with those of the logistic regression, particularly in the case of the first negative binomial model (Table 5Table 5, column (2)), which includes the number of CALES projects per block group as the dependent variable. The second negative binomial model (Table 5, column (3)), which has the number of new residential units as the dependent variable, shows a few notable differences. *Percent owner-occupied*, for instance, was statistically insignificant. Furthermore, according to this model, both *Percent commercial* and its spatial lag had significant positive coefficients, indicating that more multi-family housing units would be located in proximity to commercial zones.

# Delays in the Permitting of Transit-Accessible Development Projects

## Descriptive Statistics

Table 6 illustrates that discretionary project approval times varied substantially among the five study cities for which the relevant data were available. (Durations for permitting processes were unavailable for Inglewood.) By far the fastest approval times were in Redondo Beach, although Redondo Beach approved a much lower number of units per capita than the other five study cities. In other words, Redondo Beach approved relatively few units per capita, but those projects that it did approve navigated the approvals process relatively quickly. This relative speed is potentially noteworthy, because as Table 3 above illustrates, Redondo Beach has the least transit accessibility of the six study cities.

**Table 6. Discretionary Project Approval Durations**

| | | | | Project Approval Process Duration (Days) | | |
|---|---|---|---|---|---|---|
| Jurisdiction | Projects | Units | Avg. Units per Project | 20th Percentile | 50th Percentile | 80th Percentile |
| Inglewood | 4 | 568 | 142 | NA | NA | NA |
| Long Beach | 27 | 2,604 | 96 | 189 | 231 | 532 |
| Los Angeles | 785 | 61,261 | 78 | 174 | 300 | 517 |
| Pasadena | 37 | 1,608 | 43 | 88 | 292 | 576 |
| Redondo Beach | 7 | 211 | 30 | 42 | 66 | 214 |
| Santa Monica | 21 | 1,447 | 69 | 320 | 500 | 1,591 |

*Source:* CALES

There are many reasons why Redondo Beach might have much faster discretionary approval processes than the other cities. For example, as Table 6 illustrates, projects in Redondo Beach were relatively small — the average number of units per discretionary project was 30, as compared with (for example) 78 units in Los Angeles and 96 units in Long Beach. Smaller projects might be relatively easy to develop if they are likely to have less impact on a neighborhood than larger projects, and therefore, engender less opposition.

Pollution burdens are also higher for projects located near transit and, as a result, these projects may require more environmental analysis and mitigation as part of the permitting process. One widely used metric for pollution in California is the pollution burden score from CalEnviroScreen 3.0. This score is based on a composite of environmental effect indicators (e.g., cleanup sites, solid waste facilities) and exposure indicators (e.g., particulate matter concentrations, children's lead risk from housing). Countywide, the average pollution burden score is 6.19 and the median is 6.21, with a standard deviation of 1.34. For census tracts in which SCAG has designated at least half of the land area as a high-quality transit area (HQTA), the mean pollution burden score is 6.58 and the median is 6.47. By contrast, in tracts where less than half of the land area is HQTA, the mean pollution burden score is 5.7 and the median is 5.74.

## Regression Model Overview

Because there are many potential factors affecting the length of approval processes, we use regression models to identify how particular project-level and contextual attributes are associated with the time taken for project approval. We focus on processes involving discretionary approvals, which are by far the most numerous in our dataset. An appendix includes regression models for processes involving only ministerial approvals (Table A 1 and Table A 3). These supplemental models explore relationships between ministerial permitting timelines and other variables related to non-discretionary review procedures. (Ministerial and discretionary review timelines are not directly comparable, because – as noted above – ministerial timelines terminate with a building permit, and discretionary timelines terminate with an entitlement.)

Analysis of permitting delays inevitably confronts problems of selection bias because projects are only likely to be proposed if developers anticipate that the project will be approved in a timely fashion. To mitigate this form of bias, we focus on extreme delays, defined here as the slowest 20 percent of approval processes. Thus, our outcome variable is a binary variable that takes a value of 1 if a project is in the top 20 precent of delays within our sample (i.e., lasted at least 531 days for discretionary projects) and zero otherwise.

Our project-level variables, detailed in Table 7 and summarized in Table 8Table 8, include:

- A logarithmic transformation of the number of new residential units in a project. This number may be relevant because, as noted above, larger projects may engender more opposition (or may require more mitigation) resulting in a longer approval process.
- The pollution burden score (from CalEnviroScreen 3.0) of the census tract where a project is located.
- Dichotomous variables indicating whether a project:
  - includes below-market-rate units
  - consists of multifamily (i.e., apartment) units
  - required a rezoning or General Plan amendment
  - is on a site where the previous land use was residential
  - required demolition
  - was exempt from the California Environmental Quality Act

- is located in a block group where the individual poverty rate exceeds 10 percent
  - is within half a mile of a rail station
  - has high, medium, or low bus accessibility (based on terciles of the number of bus stops within half a mile of each project)
- Continuous variables indicating the percentage of land area within a half-mile radius consisting of single-family residential uses, multi-family residential uses, commercial uses, industrial uses, and vacant land
- Dichotomous variables indicating the cities where the projects are located
- The number of parking spaces provided, on average, for each residential unit in a project.

## Table 7. Variables for Delay Regression Models

| Variable | Definition | Source |
|---|---|---|
| *Project characteristics* | | |
| Extreme delay | Duration of approvals process in top 20% of all projects in relevant category (discretionary or ministerial) | (1) |
| New housing units (log) | Natural logarithm of the number of new housing units | (1) |
| Building height | Height of tallest building in project | (1) |
| Unit types | = 1 if project is multifamily, 0 otherwise | (1) |
| Project type | = 1 if project is mixed use (i.e., contains both commercial and residential components) | (1) |
| Includes BMR units | = 1 if project included deed-restricted below-market-rate units | (1) |
| Prior residential use | = 1 if prior use of project site was residential | (1) |
| Rail accessibility | = 1 if there is at least one rail stop within a half-mile radius of the | (2) |
| Bus accessibility | Categorical variable (Low, Medium, and High), based on terciles of the number of high-frequency bus stops within a half-mile radius. | (3) |
| Parking per unit | Number of parking spaces per new residential unit | (1) |
| ***Project-level regulatory characteristics*** | | |
| Rezoning or General Plan Amendment | = 1 if project required a rezoning or general plan amendment | (1) |
| CEQA Exempt | = 1 if project was exempt from review pursuant to the California Environmental Quality Act | (1) |
| Demolition | =1 if project entailed demolition of pre-existing structures | (1) |
| ***Neighborhood characteristics*** | | |
| Pollution burden score | Tract-level pollution burden score from CalEnviroScreen 3.0. | (4) |
| Low poverty (dichotomous) | = 1 if less than 10% of residents in the block group containing the project have incomes below the poverty line | (5) |
| Multifamily residential (%) | Percentage of land area within 0.5 mi. of project dedicated to multifamily residential | (6) |
| Single-family residential (%) | % of land area within a half-mile radius of the project dedicated to single-family residential uses | (6) |
| Commercial (%) | % of land area within a half-mile radius of the project dedicated to commercial uses | (6) |
| Industrial (%) | % of land area within a half-mile radius of the project dedicated to industrial uses | (6) |
| Vacant % | % of land area within a half-mile radius of the project that is vacant | (6) |

*Sources:* (1) CALES; (2) Southern California Association of Governments (n.d.-b); (3) Southern California Association of Governments (n.d.-c); (4) California Office of Environmental Health Hazard Assessment (2018); (5) U.S. Census Bureau (n.d.-d.); (6) Southern California Association of Governments (n.d.-a).

## Table 8. Summary Statistics for Discretionary Regression Sample

| Characteristic | N = 861[†] |
|---|---|
| New housing units (log) | 3.44 / 3.37 (1.23) |
| Building height | 70 / 56 (78) |
| NA | 184 |
| Unit types | |
| Not multifamily | 204 / 861 (24%) |
| Multifamily | 657 / 861 (76%) |
| Project type | |
| Residential only | 642 / 861 (75%) |
| Mixed Use | 219 / 861 (25%) |
| Includes BMR units | 388 / 861 (45%) |
| Prior residential use | |
| Site not previously used for housing | 393 / 848 (46%) |
| Site previously used for housing | 455 / 848 (54%) |
| NA | 13 |
| Rail accessibility | |
| No rail stops in 0.5 mi. radius | 595 / 861 (69%) |
| ≥ 1 rail stop in 0.5 mi. radius | 266 / 861 (31%) |
| Bus accessibility | |
| Low | 274 / 861 (32%) |
| Medium | 292 / 861 (34%) |
| High | 295 / 861 (34%) |
| Rezoning or GPA | |
| No rezoning or GPA | 752 / 861 (87%) |
| Rezoning or GPA | 109 / 861 (13%) |
| CEQA exempt | 315 / 861 (37%) |
| Demolition | |
| No demolition | 232 / 810 (29%) |
| Complete or partial demolition of existing improvements | 578 / 810 (71%) |
| NA | 51 |
| Pollution burden score | 6.63 / 6.45 (1.03) |
| Low poverty | |
| ≥ 10% of pop. below pov. line | 163 / 861 (19%) |
| < 10% of pop. below pov. line | 698 / 861 (81%) |
| Multifamily residential (%) | 26 / 26 (15) |
| Single-family residential (%) | 28 / 26 (21) |
| Commercial (%) | 21 / 19 (12) |
| Industrial (%) | 6 / 2 (8) |
| Vacant (%) | 2.0 / 0.3 (4.7) |
| Jurisdiction | |
| Pasadena | 34 / 861 (3.9%) |
| Inglewood | 0 / 861 (0%) |
| Long Beach | 26 / 861 (3.0%) |
| Los Angeles | 780 / 861 (91%) |
| Redondo Beach | 7 / 861 (0.8%) |
| Santa Monica | 14 / 861 (1.6%) |

[†] Mean / Median (SD); n / N (%)

As Table 8 illustrates, several variables have missing data (e.g., building height, demolition). These issues lead us to estimate model specifications using several different samples, as illustrated in Table 9Table 9. In addition, we can only observe the average number of parking spaces per unit in projects that do not include any commercial components. This is because, for each project, we only observe the total number of parking spaces constructed. In mixed-use projects, some unknown proportion of these parking spaces is allocated to commercial uses. Thus, when we include parking spaces per unit in our models, we exclude all mixed-use projects (Table A 2 and Table A 3).

Finally, our regression samples exclude 13 projects involving development agreements. Development agreements enable cities to commit to freezing the land-use regulations applicable to a particular parcel, to protect developers from any potential subsequent adverse regulatory changes (Cal. Gov't. Code § 65867). Development agreements are relatively rare in our sample, constituting only 1.48 percent of all discretionary observations, and projects associated with development agreements take substantially longer to approve — the median approval time for a discretionary project *without* a development agreement is 298 days, whereas the median approval time for a discretionary project *with* a development agreement is 1,114 days. For these reasons, we think that projects involving development agreements may differ systematically in unobserved ways from other projects, and we exclude them from our sample, although our results are robust to the inclusion of these projects.

## Model Results

The regression models reveal that most neighborhood and project characteristics are not associated with extreme delay at conventional levels of statistical significance. We find no evidence that bus accessibility or rail accessibility is associated with extreme delay for either discretionary projects or ministerial projects.

Only three variables were consistently significantly associated with extreme delay: the percentages of land within a half mile radius dedicated to, respectively, single-family housing and industrial uses, and whether a project required a rezoning or general plan amendment (Table 9). In all model specifications for discretionary projects, a one percentage point increase in the proportion of land area within a half-mile radius used for single-family housing is associated with a 2.3 to 2.83 percent decrease in the odds of a project being extremely delayed, depending on the model specification. At first glance, this result is surprising, given the conventional wisdom that homeowner opposition is a significant impediment to new large-scale development. However, the result appears to be a product of the sample, because there are very few single-family dominant areas in our sample. (The median percentage of single-family land area within a half-mile radius of a discretionary project is 25.81 percent, and the standard deviation is 21.09.) Moreover, our measure of proximity does not account for the presence of features such as highways and natural barriers that may make residents in a given single-family neighborhood relatively indifferent to development within a half-mile radius (e.g., if that development occurs on the opposite side of a highway).

## Table 9. Discretionary Projects Logistic Regression Models (Dependent Variable = Extreme Delay)

| | (1) | | (2) | | (3) | |
|---|---|---|---|---|---|---|
| **Characteristic** | **OR**[1,2] | **SE**[2] | **OR**[1,2] | **SE**[2] | **OR**[1,2] | **SE**[2] |
| New housing units (log) | 0.98 | 0.133 | 1.18 | 0.119 | 1.19 | 0.110 |
| Building height | 1.00 | 0.001 | | | | |
| Unit types | | | | | | |
| Not multifamily | — | — | — | — | — | — |
| Multifamily | 1.08 | 0.369 | 1.15 | 0.316 | 1.22 | 0.296 |
| Project type | | | | | | |
| Residential only | — | — | — | — | — | — |
| Mixed Use | 0.70 | 0.289 | 0.70 | 0.291 | 0.66 | 0.264 |
| Includes BMR units | | | | | | |
| No | — | — | — | — | — | — |
| Yes | 1.71* | 0.258 | 1.37 | 0.230 | 1.31 | 0.220 |
| Prior residential use | | | | | | |
| Site not previously used for housing | | | — | — | | |
| Site previously used for housing | | | 0.93 | 0.265 | | |
| Rail accessibility | | | | | | |
| No rail stops in 0.5 mi. radius | — | — | — | — | — | — |
| ≥ 1 rail stop in 0.5 mi. radius | 1.58 | 0.268 | 1.41 | 0.252 | 1.54 | 0.245 |
| Bus accessibility | | | | | | |
| Low | — | — | — | — | — | — |
| Medium | 0.86 | 0.298 | 0.89 | 0.274 | 0.92 | 0.263 |
| High | 0.75 | 0.364 | 0.79 | 0.332 | 0.83 | 0.322 |
| Rezoning or GPA | | | | | | |
| No rezoning or GPA | — | — | — | — | — | — |
| Rezoning or GPA | 3.32*** | 0.299 | 3.06*** | 0.276 | 3.27*** | 0.264 |
| CEQA exempt | | | | | | |
| No | — | — | — | — | — | — |
| Yes | 0.64 | 0.264 | 0.70 | 0.241 | 0.76 | 0.232 |
| Demolition | | | | | | |
| No demolition | | | — | — | | |
| Complete or partial demolition of existing improvements | | | 1.04 | 0.239 | | |
| Pollution burden score | 1.15 | 0.126 | 1.10 | 0.116 | 1.18 | 0.111 |
| Low poverty | | | | | | |
| ≥ 10% of pop. below pov. line | — | — | — | — | — | — |
| < 10% of pop. below pov. line | 0.89 | 0.295 | 0.99 | 0.265 | 1.11 | 0.260 |
| Multifamily residential (%) | 0.98 | 0.011 | 0.98 | 0.011 | 0.98* | 0.010 |
| Single-family residential (%) | 0.97** | 0.010 | 0.97** | 0.010 | 0.98* | 0.009 |
| Commercial (%) | 0.98 | 0.013 | 0.98 | 0.013 | 0.98 | 0.012 |
| Industrial (%) | 0.96* | 0.018 | 0.96* | 0.017 | 0.96** | 0.016 |
| Vacant (%) | 1.02 | 0.026 | 1.02 | 0.023 | 1.01 | 0.021 |
| Jurisdiction | | | | | | |
| Pasadena | — | — | — | — | — | — |
| Long Beach | 0.30 | 0.98 | 0.47 | 0.769 | 0.69 | 0.687 |
| Los Angeles | 0.99 | 0.617 | 0.91 | 0.525 | 0.96 | 0.512 |
| Redondo Beach | 2.16 | 1.26 | 1.63 | 1.22 | 2.04 | 1.21 |
| Santa Monica | 0.34 | 1.21 | 1.50 | 0.849 | 1.42 | 0.831 |
| No. Obs. | 677 | | 805 | | 861 | |

[1] *p<0.05; **p<0.01; ***p<0.001
[2] OR = Odds Ratio, SE = Standard Error

We find no association between transit accessibility and extreme delay and find a statistically significant relationship with only one regulatory variable — a dichotomous variable indicating whether a project was subject to a rezoning or general plan amendment. We find that a rezoning or general plan amendment is associated with a change of 326.52 percent in the odds of a project being extremely delayed.

This finding suggests that zoning supportive of multifamily development can reduce delay in the approval of multifamily housing. Given our finding that, in cities with extensive transit infrastructure, new projects were generally located in parts of the city with high proximity to transit, cities could potentially expedite transit-accessible housing development by ensuring that general plans and zoning accommodate multifamily development near transit.

# Conclusion

Our analysis of all residential projects of five units or more that were approved from 2014 through 2017 in six California jurisdictions shows that, in cities with extensive transit infrastructure, new projects were generally located in parts of the city with high proximity to transit. Proximity to rail stops or high frequency bus stops is not a significant determinant of extreme delay in project approvals. Instead, our results indicate that one factor under governmental control exerts significant influence over extreme delays — whether a project requires a rezoning or a general plan amendment. It is not surprising that the need for a rezoning or general plan amendment is associated with extreme delays, because — unlike some of the other regulatory approvals that we measured — rezonings and general plan amendments require approval by the local governing body (e.g., the city council).

This finding provides empirical support for recent efforts such as Los Angeles's Transit Oriented Communities (TOC) program, which went into effect at the end of our study period, on September 22, 2017. The TOC program allows transit-proximate projects to receive ministerial approvals coupled with density bonuses beyond that allowed by the underlying zoning ordinance. The density increases depend on the distance between a qualifying project and a transit stop, the type of transit stop, and the percentage of BMR units that are affordable at different income levels (City of Los Angeles 2018). Preliminary evidence suggests that the authorization of ministerial processes under the TOC program has increased review times, relative to the discretionary alternative (Manville et al. 2022). There is also evidence that, in some areas, the density increases due to TOC — in combination with the ministerial approval process — have made mixed-income development more attractive than lower-density market-rate development (Zhu et al. 2021).

# Appendix

### Table A 1. Ministerial Projects Logistic Regression Models (Dependent Variable = Extreme Delay)

| | (1) | | (2) | | (3) | |
|---|---|---|---|---|---|---|
| **Characteristic** | **OR**[1,2] | **SE**[2] | **OR**[1,2] | **SE**[2] | **OR**[1,2] | **SE**[2] |
| New housing units (log) | 0.82 | 0.328 | 0.77 | 0.368 | 0.55 | 0.396 |
| Building height | | | | | 1.01 | 0.012 |
| Project type | | | | | | |
| Residential only | — | — | — | — | — | — |
| Mixed Use | 1.00 | 1.23 | 0.53 | 1.60 | 0.53 | 1.46 |
| Includes BMR units | | | | | | |
| No | — | — | — | — | — | — |
| Yes | 0.75 | 0.521 | 0.78 | 0.545 | 0.98 | 0.615 |
| Prior residential use | | | | | | |
| Site not previously used for housing | | | — | — | | |
| Site previously used for housing | | | 0.33 | 0.724 | | |
| Rail accessibility | | | | | | |
| No rail stops in 0.5 mi. radius | — | — | — | — | — | — |
| ≥ 1 rail stop in 0.5 mi. radius | 0.48 | 0.710 | 0.48 | 0.719 | 0.17 | 1.13 |
| Bus accessibility | | | | | | |
| Low | — | — | — | — | — | — |
| Medium | 1.54 | 0.484 | 1.64 | 0.508 | 2.42 | 0.572 |
| High | 0.54 | 0.697 | 0.57 | 0.688 | 1.56 | 0.819 |
| Demolition | | | | | | |
| No demolition | | | — | — | | |
| Complete or partial demolition of existing improvements | | | 1.79 | 0.645 | | |
| Pollution burden score | 1.31 | 0.248 | 1.18 | 0.257 | 1.30 | 0.265 |
| Low poverty | | | | | | |
| ≥ 10% of pop. below pov. line | — | — | — | — | — | — |
| < 10% of pop. below pov. line | 0.66 | 0.482 | 0.74 | 0.533 | 0.41 | 0.550 |
| Multifamily residential (%) | 0.94* | 0.025 | 0.94* | 0.026 | 0.93** | 0.029 |
| Single-family residential (%) | 0.96* | 0.019 | 0.96* | 0.019 | 0.96 | 0.020 |
| Commercial (%) | 1.02 | 0.037 | 1.02 | 0.038 | 1.03 | 0.042 |
| Industrial (%) | 0.93 | 0.040 | 0.93 | 0.042 | 0.95 | 0.043 |
| Vacant (%) | 0.89 | 0.117 | 0.94 | 0.142 | 0.90 | 0.107 |
| No. Obs. | 195 | | 177 | | 165 | |

[1] *p<0.05; **p<0.01; ***p<0.001

[2] OR = Odds Ratio, SE = Standard Error

**Table A 2. Discretionary Projects Logistic Regression Models (Excluding Mixed Use); Dependent Variable = Extreme Delay**

| | (1) | | (2) | | (3) | |
|---|---|---|---|---|---|---|
| **Characteristic** | **OR[1,2]** | **SE[2]** | **OR[1,2]** | **SE[2]** | **OR[1,2]** | **SE[2]** |
| New housing units (log) | 1.00 | 0.215 | 0.96 | 0.176 | 0.97 | 0.168 |
| Building height | 0.98 | 0.013 | | | | |
| Unit types | | | | | | |
| Not multifamily | — | — | — | — | — | — |
| Multifamily | 1.30 | 0.463 | 1.07 | 0.390 | 1.08 | 0.380 |
| Includes BMR units | | | | | | |
| No | — | — | — | — | — | — |
| Yes | 1.76 | 0.360 | 1.73 | 0.338 | 1.85 | 0.329 |
| Prior residential use | | | | | | |
| Site not previously used for housing | | | — | — | | |
| Site previously used for housing | | | 1.41 | 0.364 | | |
| Rail accessibility | | | | | | |
| No rail stops in 0.5 mi. radius | — | — | — | — | — | — |
| ≥ 1 rail stop in 0.5 mi. radius | 1.27 | 0.361 | 1.08 | 0.345 | 1.21 | 0.333 |
| Bus accessibility | | | | | | |
| Low | — | — | — | — | — | — |
| Medium | 0.89 | 0.376 | 0.93 | 0.342 | 1.00 | 0.339 |
| High | 0.64 | 0.498 | 0.63 | 0.450 | 0.69 | 0.443 |
| Parking spaces per unit | 0.94 | 0.212 | 1.01 | 0.183 | 1.06 | 0.177 |
| Rezoning or GPA | | | | | | |
| No rezoning or GPA | — | — | — | — | — | — |
| Rezoning or GPA | 2.76* | 0.477 | 3.19** | 0.424 | 3.13** | 0.415 |
| CEQA exempt | | | | | | |
| No | — | — | — | — | — | — |
| Yes | 0.55 | 0.309 | 0.60 | 0.288 | 0.61 | 0.281 |
| Demolition | | | | | | |
| No demolition | | | — | — | | |
| Complete or partial demolition of existing improvements | | | 0.60 | 0.333 | | |
| Pollution burden score | 1.17 | 0.180 | 1.05 | 0.158 | 1.10 | 0.154 |
| Low poverty | | | | | | |
| ≥ 10% of pop. below pov. line | — | — | — | — | — | — |
| < 10% of pop. below pov. line | 0.69 | 0.357 | 0.84 | 0.323 | 0.93 | 0.318 |
| Multifamily residential (%) | 0.97* | 0.015 | 0.97* | 0.014 | 0.97* | 0.014 |
| Single-family residential (%) | 0.95*** | 0.013 | 0.96*** | 0.012 | 0.96*** | 0.012 |
| Commercial (%) | 0.97 | 0.021 | 0.98 | 0.019 | 0.97 | 0.018 |
| Industrial (%) | 0.88*** | 0.035 | 0.90*** | 0.032 | 0.89*** | 0.031 |
| Vacant (%) | 0.99 | 0.039 | 1.02 | 0.034 | 1.01 | 0.033 |
| Jurisdiction | | | | | | |
| Pasadena | — | — | — | — | — | — |
| Long Beach | 0.27 | 1.28 | 0.59 | 1.10 | 0.50 | 1.08 |
| Los Angeles | 0.36 | 0.855 | 0.40 | 0.743 | 0.36 | 0.742 |
| Redondo Beach | 0.00 | 1,186 | 0.00 | 722 | 0.00 | 719 |
| Santa Monica | 0.00 | 1,378 | 0.00 | 835 | 0.00 | 833 |
| No. Obs. | 432 | | 514 | | 534 | |

[1] *p<0.05; **p<0.01; ***p<0.001

[2] OR = Odds Ratio, SE = Standard Error

**Table A 3. Ministerial Projects Logistic Regression Models (Excluding Mixed Use); Dependent Variable = Extreme Delay**

| | (1) | | (2) | | (3) | |
|---|---|---|---|---|---|---|
| **Characteristic** | **OR**[1,2] | **SE**[2] | **OR**[1,2] | **SE**[2] | **OR**[1,2] | **SE**[2] |
| New housing units (log) | 1.01 | 0.361 | 0.91 | 0.387 | 1.05 | 0.527 |
| Building height | | | | | 0.95 | 0.039 |
| Includes BMR units | | | | | | |
| No | — | — | — | — | — | — |
| Yes | 0.65 | 0.541 | 0.63 | 0.560 | 0.69 | 0.665 |
| Prior residential use | | | | | | |
| Site not previously used for housing | | | — | — | | |
| Site previously used for housing | | | 0.33 | 0.749 | | |
| Rail accessibility | | | | | | |
| No rail stops in 0.5 mi. radius | — | — | — | — | — | — |
| ≥ 1 rail stop in 0.5 mi. radius | 0.36 | 0.783 | 0.35 | 0.797 | 0.12 | 1.26 |
| Bus accessibility | | | | | | |
| Low | — | — | — | — | — | — |
| Medium | 1.98 | 0.503 | 2.05 | 0.520 | 3.21 | 0.598 |
| High | 0.59 | 0.712 | 0.63 | 0.704 | 1.74 | 0.828 |
| Parking spaces per unit | 0.85 | 0.355 | 0.76 | 0.359 | 0.78 | 0.412 |
| Demolition | | | | | | |
| No demolition | | | — | — | | |
| Complete or partial demolition of existing improvements | | | 1.86 | 0.658 | | |
| Pollution burden score | 1.27 | 0.264 | 1.18 | 0.273 | 1.32 | 0.283 |
| Low poverty | | | | | | |
| ≥ 10% of pop. below pov. line | — | — | — | — | — | — |
| < 10% of pop. below pov. line | 0.64 | 0.499 | 0.65 | 0.548 | 0.37 | 0.587 |
| Multifamily residential (%) | 0.94* | 0.026 | 0.94* | 0.028 | 0.92** | 0.030 |
| Single-family residential (%) | 0.97 | 0.019 | 0.96 | 0.020 | 0.96 | 0.021 |
| Commercial (%) | 1.04 | 0.041 | 1.04 | 0.042 | 1.07 | 0.047 |
| Industrial (%) | 0.93 | 0.042 | 0.92 | 0.043 | 0.94 | 0.047 |
| Vacant (%) | 0.72 | 0.262 | 0.76 | 0.279 | 0.77 | 0.205 |
| No. Obs. | 185 | | 169 | | 156 | |

[1] *p<0.05; **p<0.01; ***p<0.001

[2] OR = Odds Ratio, SE = Standard Error

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