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RESEARCH REPORT

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Accessibility, Affordability, and the Allocation of Housing Targets to California's Local Governments

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16. Abstract
California's Housing Element law establishes processes for determining regional housing needs and allocating these housing needs to cities and counties in the form of numerical targets. This study assesses whether the state's housing allocation process achieves the state's goals of promoting housing development in areas accessible to transit, jobs, and socioeconomic opportunities. Our first analysis compares the mechanism that the Southern California Association of Governments (SCAG) uses to allocate housing units to local governments with two simpler alternatives. For all three allocation mechanisms, we assess whether the resulting allocations align with the goal of promoting housing development in areas with high social mobility and near transit and jobs. We find that SCAG's allocation method may be unnecessarily complex, and that simpler allocation methods – which are less susceptible to technical difficulties and political wrangling – could achieve the state's policy objectives with less administrative burden. Our second analysis, based on case studies of two Southern California cities, provides preliminary evidence that current enforcement mechanisms adopted in California may be insufficient to ensure that local governments accommodate their housing targets and promote housing development near transit and job centers.

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Accessibility, Affordability, and the Allocation of Housing Targets to California's Local Governments

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Executive Summary

Executive Summary

California's Housing Element law is intended to ensure that local governments plan for new housing to meet each community's needs and to equitably accommodate the state's future population growth. The law establishes processes for the state to periodically determine regional housing needs and requires regional councils of governments (COGs) to develop methodologies to allocate these housing needs in the form of numerical targets to cities and counties within their jurisdiction.

The COGs' allocation methods are intended to address the state's overall housing needs by improving intraregional jobs-housing balance, promoting efficient development patterns, and reducing greenhouse gas emissions (Cal. Gov. Code, §65584(d)).[1] State law requires these allocation methods to account for at least a dozen factors, including the "existing and projected jobs and housing relationship," the rate of overcrowding, and a variety of specific "opportunities and constraints to development of additional housing," such as sewer capacity and land availability (Cal. Gov. Code, §65584.04(e)).

The efficacy of the Housing Element law depends on whether local governments effectively accommodate development of the allocated housing units. Localities are required to assure, through their land use plans and policies, sufficient developable sites to meet their target allocations. The California Department of Housing and Community Development (HCD) reviews local housing plans for compliance with these requirements. Enforcement also depends on the efforts of non-governmental organizations and housing developers to ensure that local land use and zoning policies accommodate the housing allocations.

Implementation of the Housing Element law thus entails a combination of allocation and enforcement mechanisms. Different forms of implementation could have varying impacts on both the supply and location of new housing. Yet, state legislators and housing agency administrators have little information to evaluate whether the Housing Element law effectively promotes the goals of improved intraregional jobs-housing balance and more efficient development patterns.

This research provides decision support for state legislators and housing agency administrators by addressing the following questions: (1) What are the potential differences, in terms of job and transit accessibility at the municipality level, that different allocation methods could produce? and (2) What are the potential development and accessibility outcomes associated with different implementation mechanisms (i.e., combinations of allocation and enforcement methods)? Our findings also provide guidance for COGs seeking to improve their allocation processes and for local governments assessing different policies and programs to better accommodate the allocated housing units.

This study first examines the allocation method developed by the Southern California Association of Governments (SCAG) for the upcoming 2021-2029 planning cycle. As required by state law, SCAG's allocation methodology

[1] These greenhouse gas reduction targets are included in regional Sustainable Communities Strategies, which are long-range plans developed by metropolitan planning organizations that integrate transportation, housing, and land use in order to achieve greenhouse gas reduction targets.

accounts for many different factors. While such a multi-criteria methodology could help COGs such as SCAG to address different policy objectives, such as improving access to transit, jobs, and other opportunities (e.g., education), our analysis suggests that multi-criteria methods can be *unnecessarily* complex, and that simpler methods may achieve the state's asserted policy objectives with less administrative burden. We present an alternative allocation mechanism using a simple calculation procedure and readily available data. This alternative method allocates housing to jobs-rich jurisdictions without compromising other policy goals, such as allocating housing units to communities with high opportunity for socioeconomic advancement.

Our analysis also indicates that the multi-criteria method prescribed by state law can create imbalanced allocations among some cities with similar local characteristics, such as income levels and access to jobs and transit. Such imbalanced allocations may lead to uneven progress toward improving accessibility across the region, and they may undermine the goals of equitable development. To illustrate this problem, we present a case study of two Southern California communities with similar socioeconomic conditions that received very different allocations under the SCAG methodology. Our two-city case study provides tentative and preliminary evidence that current enforcement mechanisms may be insufficient to ensure that local governments provide adequate sites to accommodate the allocated housing targets and promote housing development in transit- or jobs-rich areas.

Our report provides guidance for refining California's housing allocation process and linking housing, land use, and transportation policies. First, the housing allocation process could be improved and simplified. Second, to better enforce the housing allocations, state legislators should continue to assess strategies for addressing restrictive land use regulations and expanding housing opportunities in transit- or jobs-rich areas.

Contents

Introduction

High housing costs in California's most economically dynamic regions have resulted in a host of problems including overcrowding, homelessness, and reduced social mobility (Acolin & Wachter, 2017; Curtis et al., 2013; Ganong & Shoag, 2017; Myers & Lee, 1996). There is widespread agreement that more market-rate and more below-market-rate (BMR) housing is needed to mitigate housing cost burdens for current and future Californians. This new housing should be located in areas that provide good access to employment and high-quality public services.

California attempts to accomplish these goals via its Housing Element law, which establishes processes for determining regional housing needs and allocating these housing needs to cities and counties in the form of numerical targets. California's housing allocation process is intended to promote socioeconomic equity, facilitate efficient development patterns, and support long-range regional strategies to reduce greenhouse gas emissions (Cal. Gov. Code, §65584(d)).[2]

This study assesses whether California's housing allocation process accomplishes these goals, addressing two important topics concerning transportation and housing linkages: (1) how state and regional housing policies can improve transit accessibility at the community level through the housing needs allocation process, and (2) whether such policies provide incentives for local jurisdictions to promote housing development in neighborhoods with multiple transportation options, which provide an important means of accessing jobs and other essential destinations.

California's Housing Element law prescribes a complex, multi-agency procedure for allocating housing targets. The state's Department of Housing and Community Development (HCD) first determines regional housing needs based on various factors, including projected household growth, rent burdens, and overcrowding. HCD then assigns numerical targets to each region, in consultation with regional Councils of Governments (COGs). This process is known as the Regional Housing Needs Assessment (RHNA). Next, each COG is responsible for developing a methodology for allocating the finalized RHNA number among the cities and unincorporated areas within its jurisdiction to promote, among other objectives, efficient development patterns and socioeconomic equity. COGs are required to incorporate at least a dozen factors in their methodologies, such as local jobs-housing relationships and opportunities to increase the use of public transit (Cal. Gov. Code, §65584.04(e)). Upon receiving the allocations, each local government must update the housing element of its general plan and identify sites with the capacity to accommodate the development of the allocated housing units. HCD reviews all local housing elements and determines whether they are in compliance with state law.

The effectiveness of any housing allocation procedure will depend on the way it is implemented. In this context, *implementation* includes the ways that regional housing targets are calculated and allocated to local governments, as well as the enforcement mechanisms empowering state agencies, non-governmental organizations, and housing developers to ensure that local governments fulfill their obligations to accommodate the allocated housing units.

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[2] More broadly, the legislature has declared that the Housing Element law is intended to mitigate housing costs in order to address problems including "imbalance in jobs and housing, reduced mobility, urban sprawl, [and] excessive commuting[.]" CAL. GOV. CODE, §65589.5(a)(1)(C) (2019).

Different combinations of allocation and enforcement mechanisms could have varying impacts on both the supply and location of new housing. There is evidence that, in the past, California's housing allocation process has not effectively served the goals of spurring housing production and promoting jobs accessibility (Lewis, 2005; Monkkonen et al., 2019). State legislators and housing agency administrators, however, have little information to evaluate whether the current housing target allocation process effectively promotes housing development in areas accessible to transit and jobs. This research therefore provides decision support for state legislators and administrators by assessing the allocation and enforcement of housing targets under current state law.

This study consists of two analyses. The first analysis compares the distributions of the housing targets in the SCAG region allocated based on the multi-criteria method prescribed in California's Housing Element law with two simpler alternative methods. We find evidence that California's method of allocating housing targets may be unnecessarily complex and, possibly, counterproductive. Simpler allocation mechanisms could potentially accomplish the same goals more expeditiously and with far lower administrative burdens. Second, we present a case study of two cities with similar socioeconomic conditions in Southern California. We show how a multi-criteria method can generate very different allocations among these communities, raising concerns about inequitable development patterns and magnifying the challenges for some communities to provide sufficient site capacity to accommodate their housing target allocations. We find evidence that current enforcement mechanisms may be insufficient to ensure that local governments provide adequate sites where housing can be accommodated and promote housing development in transit- or jobs-rich areas. The remainder of this introduction presents background information on housing target allocation and enforcement methods employed in different states as well as measures for assessing the implications of housing policies for accessibility and opportunity.

Target Allocation Methods

Housing targets, indicating the number of new housing units that jurisdictions are obliged to accommodate, can be allocated based on methods that are relatively complex or simple. As detailed in Appendix 1, some states – such as Massachusetts – use a simple bright-line rule that sets housing targets as a flat percentage of the existing housing stock. Others, such as California, take a more complex approach that considers multiple criteria in allocating housing targets.

Several scholars have argued for bright-line rules on the basis of administrative simplicity (Graddy & Bostic, 2010; Monkkonen et al., 2019). Bright-line rules are easy to understand by the public and leave little room for varying interpretations. Therefore, decision-making based on bright-line rules may be less susceptible to political wrangling, because "[w]ithout a complex allocation system, there is no one to lobby and nothing to game" (Monkkonen et al., 2019, p. 4). Bright-line rules typically do not require complex quantitative analyses or speculative projections, which can pose barriers to informed decision-making (Christiansen & Kerber, 2006). Local officials and planners can perform their jobs more effectively when they have clear and stable expectations about how allocation targets are determined. Bright-line rules do not rely on periodical, case-by-case assessments and therefore lead to clearer and more stable expectations than multi-criteria methods. Under these circumstances, planners and local officials can monitor their compliance status with respect to the housing targets, and they may be better positioned to implement long-range planning and development policies.

On the other hand, a well-designed multi-criteria allocation method could tailor housing targets to different policy objectives such as promoting efficient development patterns, reducing greenhouse gas emissions, and advancing socioeconomic equity. Simple bright-line rules may be over- or under-inclusive, for example, by setting standards that allocate too many units to communities with weak housing markets or failing to allocate sufficient units to areas with disproportionately high rates of cost-burdened households. In principle, accounting for multiple criteria could more precisely tailor housing targets to local needs, capacity, and broader state policy goals. Nevertheless, even if a complex allocation system accomplishes a set of predetermined objectives, such complexity would be unnecessary if simpler rules could accomplish the same goals equally well (Driesen, 2015). Moreover, there is little evidence that multi-criteria methods appropriately tailor housing targets.

Target Enforcement Methods

For housing targets to accomplish their goals they must be enforceable. States typically choose from three types of policy instruments to enforce their housing targets: housing planning mandates, zoning reform mandates, and zoning overrides. While a housing planning mandate generally does not require any changes to local zoning policies, the latter two provide mechanisms that facilitate the amendment of local regulatory barriers to housing production. Some states use only one of these policy instruments, and others – including California – use a mix of these policy instruments.

Under housing planning mandates, local jurisdictions are required to *plan* for an adequate supply of housing for existing and future residents. While planning mandates can prompt local governments to revise zoning regulations (which specify permitted and prohibited land uses as well as development standards) to facilitate multifamily development, they do not require it. The overall scholarly consensus is that the effects of these planning mandates are modest (Ramsey-Musolf, 2017).

Some states, such California and Minnesota, have used zoning reform mandates to complement their housing planning mandates. Specifically, they require local governments to demonstrate, in their land use and housing plans, that they have sufficient site capacity to accommodate the allocated targets (Baer, 2008; Goetz et al., 2003; Hamilton, 2018; Lewis, 2003). California and Minnesota also require local zoning regulations to be consistent with these plans.[3] Recent changes to California's housing planning law bolster the consistency requirement by compelling local jurisdictions to adopt complementary rezoning programs and new policies to remove local constraints on housing development (Elmendorf, 2019; Elmendorf et al., 2020). However, little evidence exists about the effectiveness of California's current housing planning process.

Even if a state does not impose any planning or zoning reform mandate, it can empower housing developers to seek relief through a state affordable housing appeals system (Marantz & Dillon, 2018). Under such a system, developers of qualifying BMR and mixed-income projects can obtain a zoning override, which permits them to bypass local zoning regulations and construct their projects, in jurisdictions that have not accommodated their

[3] In Minnesota, the housing allocation process is implemented in the Twin Cities region. Local land use plans and housing elements are reviewed by the Metropolitan Council. However, some commentators suggest that the Metropolitan Council has retreated from the commitment to promoting socioeconomic and racial integration and shifted affordable housing allocation away from suburban communities (Goetz et al., 2003; Hamilton, 2018).

housing allocations (Fisher & Marantz, 2015). Such zoning overrides are used in Connecticut, Massachusetts, New Jersey, and Rhode Island to enforce the affordable housing targets established in state laws, enabling developers to build proposed BMR and mixed-income projects even if they does not conform to local land use regulations. Prior studies indicate that a state affordable housing appeals system can facilitate BMR housing development, especially in areas with strong housing markets (Fisher & Marantz, 2015; Marantz & Zheng, 2018, 2020).

California, by contrast, allows few (if any) opportunities for a zoning override.[4] Instead, local governments are merely required to adopt housing elements and rezoning programs that create the capacity to accommodate the development of the allocated housing units. Private entities, such as non-governmental organizations and housing developers, can sue local governments that fail to sufficiently plan for the housing targets, but have limited ability to force recalcitrant municipalities to issue development permits. Moreover, while California's approach compels local governments to make land use and zoning changes to allow for more housing, in practice, local planning practices often do not align with market demand for housing (Uhler, 2017).

Measures of Accessibility and Opportunity

Scholars have used varying measures of accessibility and opportunity to assess whether affordable housing policies have increased access to transit, jobs, and socioeconomic opportunity. For example, researchers often draw on the metrics used in the federally sponsored Moving to Opportunity (MTO) program and identify areas with poverty rates below 10 percent as high opportunity locations in evaluating the siting of subsidized housing (Ellen & Horn, 2018; McClure, 2006). Recent housing and transportation studies have also drawn on the nationwide Smart Location Database (SLD), developed by the Environmental Protection Agency (EPA), to derive measures of transit and jobs accessibility (Nasri & Zhang, 2018; Palm & Niemeier, 2016). Focusing on intergenerational mobility, Chetty et al. (2014) derive novel measures of social mobility and find substantial spatial variation in these and other measures.[5] The authors find that social mobility is strongly correlated with observable location characteristics – areas with higher mobility are characterized by lower levels of racial segregation and income inequality, better school quality, stronger social networks and community involvement, and more stable family structures. Our analyses, detailed in the following sections, draw on the metrics developed in the literature and provide evidence of the potential housing development and accessibility outcomes associated with different allocation and enforcement mechanisms.

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[4] The Housing Accountability Act exempts projects with at least 20 percent of the total units affordable at 80 percent of area median income and projects with 100 percent of the total unit affordable at 120 percent of area median income from local zoning and general plan standards if (1) the local jurisdiction does not have a substantially compliant housing element, or (2) the local jurisdiction fails to identify adequate sites to accommodate the development of the housing target (Cal. Gov. Code, §65589.5(d)(5)); Elmendorf et al., 2020, pp. 36-37). To the best of our knowledge, however, developers have not exploited this provision in practice.

[5] Intergenerational mobility is measured in both absolute and relative terms. The primary measure of absolute mobility is the mean rank in the national income distribution of the children from families with a national income rank at a given percentile. The primary relative mobility measure is the difference in children's income rank outcomes associated with a 10-percentile point increase in parents' income rank.

Analysis 1: Comparison of Housing Allocation Processes

In this section, we consider three allocation scenarios and compare the resulting municipality-level housing allocation outcomes in the SCAG region, which covers the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. The first allocation scenario is based on the multi-criteria method (MCM) that was reviewed and approved by HCD and adopted by SCAG in March 2020. As compared with SCAG's previous housing allocation plans, SCAG's current MCM would allocate much higher housing targets to jobs-rich, transit-rich communities in the region's coastal counties, representing a significant departure from SCAG's prior practice of allocating the lion's share of new development to communities in inland counties with relatively limited accessibility to jobs and transit. SCAG's current MCM was the product of substantial advocacy efforts, coupled with leadership by some local elected officials, which surmounted significant opposition by many coastal communities (Dillon, 2019). While the MCM represents important progress toward advancing efficient development patterns and socioeconomic equity, as this analysis reveals, it is needlessly complex and future allocations could promote these goals even more effectively.

As required by state law, SCAG's MCM accounts for criteria such as projected household growth and the accessibility of jobs and public transit. To promote the objectives of advancing socioeconomic equity and affirmatively furthering fair housing, the MCM also seeks to account for "factors that indicate areas that have high and low concentration of access to opportunity" (SCAG, 2020b, p. 2). For each local jurisdiction, the housing targets are segmented into four income levels: very low-, low-, moderate-, and above moderate-income, which correspond to 0-50 percent, 50-80 percent, 80-120 percent, and above 120 percent of the area median income (AMI) for the relevant county (Olmstead, 2020). All cities and counties in the SCAG region must update their housing elements to reflect the housing allocations for the period of October 2021 through October 2029, which is the sixth RHNA cycle for the SCAG region.

The two alternatives represent hypothetical allocation scenarios for the SCAG jurisdictions. The first is a bright-line rule that sets housing targets at 20 percent of local housing stock for all cities (20% Rule), as reported in the 2010 census (U.S. Census Bureau, n.d.-a). The 20% Rule resembles the fixed-percentage threshold used in the Northeastern states described above and in Appendix 1. The second is a modified bright-line rule (MBLR), which ranks cities based on jobs accessibility and sets housing targets at 25 percent of local housing stock (as of 2010) for the top half of the ranked cities and 15 percent of local housing stock for the bottom half. In this allocation scenario, jobs accessibility is measured as the number of jobs within a 45-minute automobile commute, aggregated at the municipality level.[6]

[6] There are many different ways of constructing an allocation method. For example, one may also consider a method focusing on jobs accessibility by public transit. However, given the uneven distribution of public transit in our study area, this approach would significantly underestimate jobs accessibility for jobs-rich jurisdictions with few transit options.

Unlike the MCM, the two hypothetical allocation methods incorporate a minimal number of criteria. Neither the 20% Rule nor the MBLR segments housing target allocations into different income categories, although we discuss options for promoting BMR development under these allocation mechanisms. The chosen percentage thresholds allow the two hypothetical scenarios to approximate the MCM scenario in terms of average allocation per city.[7] It should be noted that our analysis focuses on the distribution of the allocated units across the region, rather than the absolute number of units allocated.

Below, we describe the three allocation scenarios in detail, focusing on a set of cities receiving relatively high total allocations. We then use a multivariate analysis to explore the relationships between allocation outcomes and local demographic and socioeconomic characteristics in each scenario. Our analysis demonstrates that, in comparison with the 20% Rule, the MBLR allocates more units to jurisdictions with relatively high jobs accessibility. Unlike the MCM, it does so based on a simple calculation procedure and readily available national data. Moreover, in comparison to the MCM, the MBLR allocates more housing units to high-opportunity communities characterized by higher incomes, lower unemployment rates, and access to high-performing schools. Our analysis suggests that, compared to both the 20% Rule and the MCM method, the MBLR better balances rule simplicity and California's goals for improving accessibility and opportunity.

Description of Allocation Scenarios

What kinds of communities are receiving high housing allocations? Do the characteristics of these communities reflect the policy goals of increasing access to transit, jobs, and opportunity? In order to answer these questions, we rank the total number of units allocated to each of the 191 cities in the SCAG region under the three allocation scenarios, and we examine the characteristics of the cities with total allocations above the 75th percentile under each scenario. Under all three allocation scenarios, the number of units allocated to these cities accounts for over two-thirds of the total allocation for all cities in the region.

Table 1 describes the accessibility, opportunity, and demographic indicators for the 47 cities allocated the most units in the SCAG region under each allocation method.[8] These indicators are used in recent housing and transportation studies (Nasri & Zhang, 2018; Palm & Niemeier, 2016), as well as by Opportunity Insights (2019) and Knaap (2017).[9] The two accessibility indicators, derived from the SLD, include the number of jobs within 45 minutes by automobile commute and by public transit. To determine whether housing allocations align with SCAG's long-range regional strategy, we include the mean percentage of land within the region's designated High

[7] Cities in the SCAG region, on average, receive allocations of 6,212 units under the MCM, 6,043 units under the 20% Rule, and 6,493 units under the MBLR.

[8] Twenty-eight cities receive high allocations (i.e., allocations above the 75th percentile) under all three methods.

[9] COGs typically use the California Tax Credit Allocation Committee (TCAC)/HCD Opportunity Indices to identify high opportunity or disadvantaged communities, but some commentators have raised concerns about the use of TCAC opportunity indicators to evaluate housing allocations (e.g., Osterberg, 2020).

Quality Transit Areas (HQTA) as of 2016 for the sampled jurisdictions.[10] HQTAs encompass "areas within one-half mile of a fixed guideway transit stop or a bus transit corridor where buses pick up passengers at a frequency of every 15 minutes or less during peak commuting hours" (SCAG, 2016, p. 8).

Our indicators of opportunity for socioeconomic advancement consist of local characteristics identified as strongly correlated to the spatial variation in social mobility in the literature, including mean third-grade math test scores in 2013 and percentages of: unemployed persons in the labor force, population aged 25 or older with an Associate degree or higher, households receiving public assistance, single-parent households, households below the poverty level, and housing units that are owner-occupied.[11] Because land-use regulation has long conferred advantages on communities where non-Hispanic white residents predominate (Rothstein, 2017; Trounstine, 2018), we also include the percentage of the population identified as non-Hispanic white, to assess whether municipalities with a higher proportion of non-Hispanic white residents receive higher or lower allocations than otherwise comparable jurisdictions.

Table 1. Means of Accessibility, Opportunity, and Demographic Indicators for Municipalities with High Allocations

Variable	Cities with High Allocations Under:			All cities
	MCM	20% Rule	MBLR	
Jobs within 45 minutes auto travel time (2010)	292,975	274,756	346,916	270,025
Jobs within 45 minutes by public transit (2010)	6,537	6,671	7,808	5,228
% land in HQTA (2016)	27	23	27	19
Mean third-grade math test scores (2013)	222	223	223	224
% unemployed	9	8	7	8
% with Associate degree or higher	30	36	36	37
% households receiving public assistance	4	3	3	3
% single-parent households	33	30	30	30
% below poverty level	16	14	14	14
% non-Hispanic white	27	37	31	36
% owner-occupied housing	53	54	53	58
Number of cities	47	47	47	191

[10] The data is updated as of June 2019 by SCAG. Available at SCAG Open Data Portal: http://gisdata-scag.opendata.arcgis.com/datasets/1f6204210fa9420b87bb2e6c147e85c3_0

[11] Third-grade math test scores are from the Stanford Education Data Archive (Version 3.0). The test scores are converted from the school district level to the municipality level using the crosswalk file from the 2014 School District Geographic Reference Files (GRFs) published by the U.S. Department of Education's National Center for Education Statistics.

Note. Cities with high allocations are the 47 cities allocated the most units in each scenario (i.e., those with total allocations above the 75th percentile in the SCAG region).

Sources: 2013-2017 American Community Survey (U.S. Census Bureau, n.d.-b); SCAG Open Data Portal (n.d.); U.S. Environmental Protection Agency (2014); Stanford Education Data Archive (Version 3) (2019).

This comparison indicates that, of the three allocation techniques, the MBLR yields the best transit and jobs accessibility outcomes. Although cities with high total allocations under all three methods have superior jobs and transit accessibility outcomes on average, compared with all cities in the region, cities with high allocations under the MBLR have the highest average number of jobs within 45 minutes by automobile and by transit — respectively, 28 percent and 49 percent higher than the average for all cities in the region. In addition, cities with high allocations under the MCM and the MBLR have, on average, 27 percent of their land in HQTAs, which is eight percentage points higher than the mean HQTA share for all cities in the region.

With respect to the opportunity indicators, cities with high allocations under the MBLR and the 20% Rule outperform those with high allocations under the MCM. Under all three allocation mechanisms, cities with high allocations have average poverty rates higher than 10 percent. But, compared to the average for all cities in the region, cities with high allocations under the MCM have poorer outcomes in terms of *all* opportunity indicators. In particular, under the MCM, cities with high housing allocations have a much lower percentage of the population with an Associate's degree or higher. These cities also have a much lower percentage of non-Hispanic white population, compared with the averages for all cities in the region. Cities with high allocations under the 20% Rule and under the MBLR differ from the regional average to a lesser extent, with many opportunity indicators showing less than two percentage points of difference.

In summary, the descriptive analysis suggests that the MBLR may be relatively more effective in guiding housing growth to transit- or jobs-rich areas. On the other hand, cities with high MCM housing allocations show relatively poor performance in the opportunity and demographic indicators despite the fact that the allocation process ostensibly accounts for access to opportunity.[12] Next, we examine the strength of the relationships between the allocation outcomes and local demographic and socioeconomic characteristics, including the accessibility of jobs and transit as well as other indicators of opportunity.

Allocation Outcomes and Accessibility

How do housing allocations vary with a particular local characteristic when other factors are held constant? This inquiry is useful for evaluating allocation methods that account for different numbers of criteria. Under the MCM, if SCAG identifies a city as having relatively good access to transit, jobs, and opportunity, the city is likely to receive relatively high housing allocations. However, the housing allocation outcomes are less straightforward for cities that do not have superior performance in *every* indicator used in the allocation process. For example, a large city near job centers may receive a small allocation simply because it provides few high-quality transit options. In this case, the resulting allocation may stymie the goal of improving local jobs-housing relationships, even though jobs accessibility is one of the factors considered in the allocation process. On the other hand, our simplest method –

[12] As explained in the following section, the MCM considers the level of local resource/opportunity through the residual adjustment factor.

the 20% Rule – allocates more units to cities with larger populations, which may systematically differ from smaller cities in other local factors such as jobs accessibility and median household income. For this reason, it is helpful to isolate the relationship between the allocation outcomes and specific local characteristics of interest. For example, do housing allocations under the MCM increase for cities with greater access to jobs, holding transit accessibility and other local factors equal? Or, are housing allocations under the 20% Rule smaller or higher for cities with better jobs accessibility with all other local factors held constant?

Data and Methods

For each allocation scenario, we use multivariate regression analysis to isolate the relationship between certain characteristics of a city, such as jobs accessibility, and the number of units allocated to the city. Our dependent variable is the number of units allocated under a given allocation method. Because our data result from a one-time event that cannot be resampled, we use the Bayesian model averaging (BMA) technique to estimate the regression coefficients. Appendix 2 explains the basic theory of BMA and its application to our analysis.

Our sample consists of all 191 cities in the SCAG region. Definitions and data sources of all variables and summary statistics are shown in Appendix 3. Our key independent variables include the accessibility of public transit and jobs. Transit access is measured as the land area of HQTA in the SCAG Region as of 2016. Jobs accessibility is measured as the number of jobs within a 45-minute automobile commute.[13] Another local characteristic of interest is each city's median household income relative to all cities in the region. As detailed below, cities with relatively high median household incomes provide better access to opportunity for socioeconomic advancement.

We sort cities by median household income into four percentile-based categories: below the 25th, 25th-50th, 50th-75th, and above the 75th percentile of the regional distribution. Table 2 shows that these categories capture variations in selected indicators of opportunity for socioeconomic advancement and demographics (see also, Marantz & Zheng, 2020). Cities in a higher income category have, on average, lower rates of unemployment and poverty, as well as smaller percentages of households receiving public assistance and of single-parent households. Meanwhile, mean third-grade math test scores are higher for these cities, as are the mean percentage of owner-occupied housing and the mean percentage of the population with an Associate degree or higher. In other words, cities in a higher income category are communities with relatively good opportunity for social mobility. Further, for cities with incomes above the 75th percentile of the regional distribution, there are stark differences in mean housing allocations between the MCM and the two alternative methods. These high-income cities, on average, received allocations of over 3,000 units under both the 20% Rule and the MBLR. But they received fewer than 2,000 units under the MCM.

In addition to our measures of accessibility and opportunity, our regression analysis controls for population size, land area, and percentages of detached single-family homes, residents aged 65 or older, and population identified as non-Hispanic white, Black, and Asian. These municipality-level demographic and socioeconomic characteristics are measured as of the 2013-2017 American Community Survey (U.S. Census Bureau, n.d.-b).

[13] Our dependent variable and several independent variables are log transformed in the regression analysis. In other words, we are assessing the percentage change in units allocated associated with a one-percent change in a specific local characteristic, all else held equal.

Table 2. Means of Selected Indicators and Housing Allocations, by Median Household Income Quartiles

	Range of City-Wide Median Household Income (MHI):			
Variable	≤25th percentile	25th-50th percentile	50th-75th percentile	>75th percentile
Mean third-grade math test scores	216	221	227	233
% unemployed	11	8	7	5
% with associate degree or higher	19	28	41	60
% households receiving public assistance	6	4	2	1
% single-parent households	43	33	27	17
% below poverty level	24	15	10	6
% non-Hispanic white	22	26	41	58
% owner-occupied housing	49	54	60	72
Units allocated under the MCM	1,700	15,122	4,538	1,977
Units allocated under the 20% Rule	3,354	11,939	5,223	3,606
Units allocated under the MBLR	3,144	13,686	5,628	3,451
Number of cities	48	48	48	47

Sources: Stanford Education Data Archive (Version 3.0); U.S. Census Bureau (n.d.-a, n.d.-b); SCAG (2020a).

Results

Table 3 reports the regression results for total units allocated under the three methods described above, and Table 4 reports the results for units allocated based on SCAG's MCM, segmented by unit-based income category (e.g., low-income units, moderate income units, etc.). We report the estimated coefficient and the inclusion probability for each variable. As explained in Appendix 2, the inclusion probability indicates the relative importance of each independent variable. For example, a local characteristic with an inclusion probability of 0.8 means that there is an 80 percent chance that the number of units allocated, based on a given allocation method, is robustly correlated with this local characteristic. In order to identify local characteristics that are robustly correlated with the allocation outcomes, we use a threshold of 50 percent for the inclusion probability, as suggested in the literature (Raftery, 1995).

Our analysis suggests that jobs accessibility, measured as the log of jobs reachable within a 45-minute automobile commute, is also robustly correlated with *total* allocations in all three scenarios (Table 3). Holding other local factors equal, both total MCM and MBLR allocations will be higher for cities with greater jobs accessibility, but total units allocated under the 20% Rule will be lower for these cities. This finding suggests that the simple 20% Rule may not effectively guide housing growth to jobs-rich areas.

We also find that, under SCAG's MCM, cities with median household incomes above the 75th percentile of the regional distribution were likely to receive smaller allocations, as compared with our two hypothetical alternatives – the 20% Rule and the MBLR. The coefficient of -0.63 suggests that average MCM allocation is almost 50 percent lower for these high-income cities, relative to cities in the rest of the region.[14] As noted above, these high-income cities are characterized by lower unemployment rates, better access to high-performing schools, and superior performance in other indicators of opportunity for socioeconomic advancement. Thus, as compared with both the 20% Rule and the MBLR, SCAG's MCM appears to fare worse with respect to important indicators of equity and access to opportunity.

Table 3. Regression Results for Total Allocation Outcomes

	(1) Total Units (log): MCM		(2) Total Units (log): 20% Rule		(3) Total Units (log): MBLR	
Variable	Coef.	*Inclusion prob.*	Coef.	*Inclusion prob.*	Coef.	*Inclusion prob.*
Population (log)	**0.881**	**1.000**	**0.982**	**1.000**	**0.953**	**1.000**
Land area (2016, log)	**0.309**	**1.000**	0.004	0.138	-0.001	0.084
HQTA (2016, log)	0.001	0.098	0.000	0.090	0.002	0.263
Jobs within 45 minutes auto travel time	**0.074**	**0.767**	**-0.023**	**0.754**	**0.041**	**0.850**
2nd MHI Quartile (dichotomous)	0.013	0.113	0.006	0.126	0.004	0.093
3rd MHI Quartile (dichotomous)	-0.016	0.125	-0.001	0.076	0.001	0.087
4th MHI Quartile (dichotomous)	**-0.631**	**1.000**	-0.003	0.090	-0.035	0.281
% Non-Hispanic White	0.000	0.071	**0.006**	**1.000**	**0.004**	**0.969**
% Black	0.000	0.071	0.001	0.181	0.000	0.079
% Asian	**0.014**	**0.996**	0.000	0.117	**0.006**	**0.976**
% Single-family detached homes	0.000	0.080	**-0.003**	**0.965**	**-0.008**	**1.000**
% Senior	0.001	0.125	**0.012**	**1.000**	**0.005**	**0.657**
N	191		191		191	

Note. The inclusion probability indicates the likelihood that the number of units allocated, under a given allocation method, is robustly correlated with a particular local characteristic. Estimated parameters for accessibility, opportunity, and demographic indicators that are robustly associated with the allocation outcomes (inclusion prob. > 0.5) are shown in bold text. Constants are not reported.

[14] Holding all else equal, the change in allocation outcomes associated with being in the top quartile of the regional MHI distribution equals to *exp*(coefficient)-1. While the reference group in the model consists of cities with MHIs below the 25th percentile of regional distribution, the allocation outcomes are likely to *not* systematically differ among MHI categories for cities with MHIs below the 75th percentile (inclusion prob. < 0.15).

Sources: SCAG (2020a); U.S. Census Bureau (n.d.-a, n.d.-b); SCAG Open Data Portal (n.d.); U.S. Environmental Protection Agency (2014).

Our finding points to the potentially excessive complexity of the MCM. Notably, housing target allocations in total or at any income level are not robustly correlated with transit accessibility, measured as logged HQTA as of 2016 (Tables 3 and 4). In other words, compared to simple allocation methods, an MCM that ostensibly incorporates transit accessibility as criteria does not necessarily more effectively guide housing development to transit-rich areas.

All three allocation methods tend to make higher allocations to larger cities.[15] The relationships between housing allocation outcomes and several other demographic characteristics are relatively robust in some cases. Holding all else equal, the allocated units under the MCM and the MBLR tend to be higher in cities with a higher percentage of Asian residents, and allocations under the 20% Rule and the MBLR tend to be higher in cities with fewer detached single-family homes.

Table 4 shows that, under the MCM method, more populous cities tend to receive higher allocations at all housing affordability levels, as do more territorially expansive cities. Allocations in the very low-, low-, and moderate-income categories tend to be higher in areas with greater jobs accessibility. Notably, even after controlling for jobs accessibility and other demographic variables, high-income cities receive lower allocations at all housing affordability levels, in comparison with cities in the bottom three quartiles of median household income.

Table 4. Regression Results for MCM Allocation Outcomes by Unit-Based Income Category

	VLI Units (log)		LI Units (log)		MI Units (log)		MR Units (log)	
Variable	Coef.	*Inclusion prob.*	Coef.	*Inclusion prob.*	Coef.	*Inclusion prob.*	Coef.	*Inclusion prob.*
Population (log)	**0.829**	**1.000**	**0.815**	**1.000**	**0.877**	**1.000**	**0.999**	**1.000**
Land area (2016, log)	**0.337**	**1.000**	**0.369**	**1.000**	**0.348**	**1.000**	**0.237**	**0.996**
HQTA (2016, log)	0.000	0.087	0.001	0.096	0.000	0.082	0.001	0.148
Jobs within 45 mins. auto travel time	**0.128**	**0.957**	**0.067**	**0.669**	**0.077**	**0.776**	0.020	0.291
2nd MHI Quartile (dichotomous)	0.129	0.414	0.090	0.321	0.009	0.092	-0.005	0.091
3rd MHI Quartile (dichotomous)	0.098	0.336	0.054	0.218	-0.006	0.086	**-0.272**	**0.811**
4th MHI Quartile (dichotomous)	**-0.228**	**0.634**	**-0.309**	**0.774**	**-0.472**	**0.990**	**-1.147**	**1.000**
Demographic controls	YES		YES		YES		YES	
N	191		191		191		191	

Note. Estimated parameters that are robustly associated with the allocation outcomes (inclusion prob. > 0.5) are shown in bold text. Constants and demographic control variables are not reported.

Sources: SCAG (2020a); U.S. Census Bureau (n.d.-b); SCAG Open Data Portal (n.d.); U.S. Environmental Protection Agency (2014).

[15] Holding all else equal, when population increase by 10%, we estimate a 9% increase in the MCM allocation and a 10% increase in the 20% Rule and in the MBLR allocations.

Based on the regression results, Table 5 provides hypothetical examples to illustrate how MCM allocations by income level would differ between cities with different levels of jobs accessibility and between those with different levels of median household income, holding other local factors equal. City A, serving as the benchmark, has 5,000 jobs within a 45-minute drive from the city and median household incomes below the 25th percentile of the regional distribution. City A receives a target of 1,000 units at each income level under the MCM. Now consider City B, which has 20 percent more jobs reachable within 45-minute drive than City A (an increase from 5,000 to 6,000 units), with other local characteristics similar across the two cities. We estimate that City B receives 1,024 very low-income, 1,012 low-income, and 1,014 moderate-income units, a slight increase relative to the numbers allocated to City A. Next, consider City C, with demographic conditions (e.g., population, land area) comparable to City A except having a median household income above the 75th percentile of the regional distribution. Compared to City A, City C would receive allocations of 796 very low-income, 734 low-income, and 624 moderate-income units, decreases of 20, 27, and 38 percent respectively. It should be noted that these numbers are simply illustrative. Our analyses do not provide causal evidence concerning the effect that a particular local characteristic will have on the number of units allocated under a given allocation method. Nevertheless, these analyses are consistent with the descriptive findings that average MCM allocations are lower in high-opportunity communities characterized by higher incomes, lower unemployment rates, and access to high-performing schools (See Table 2).

Table 5. Illustrative Examples of Changes in MCM Allocations Associated with Changes in Jobs Accessibility and in MHI Level

	City A	City B	City C
Local characteristics			
Jobs within 45 minutes auto travel time	5,000	6,000	5,000
MHI category	≤25th percentile	≤25th percentile	>75th percentile
Other characteristics	-	Same as City A	Same as City A
MCM allocations by income level			
VLI units	1,000	1,024	796
LI units	1,000	1,012	734
MI units	1,000	1,014	624
MR units	1,000	1,000	318

Note. The comparison between Cities A and B illustrates the change in MCM allocation outcomes by income level associated with the change in the number of jobs reachable within 45 minutes auto travel time, holding all else equal. The comparison of Cities A and C illustrates the change in average MCM allocation outcomes by income level between cities with MHIs below the 25th percentile of all cities in the region and those with MHIs above the 75th percentile, holding all else equal.

Concluding Observations

Overall, these findings suggest that an MCM may not be the most effective way to direct future housing development to transit-rich, jobs-rich, high-opportunity areas. The MCM we analyzed may benefit low-wage workers by allocating more lower-income units to jobs-rich municipalities, but the effects are likely to be modest. Moreover, by giving relatively small allocations to a group of high-income cities, the MCM may limit the ability of

low- and moderate-income households to afford housing in high-income cities with relatively good opportunities for socioeconomic advancement.

The accessibility of high-quality transit service and jobs are two key criteria incorporated into the MCM. However, holding all else equal, the number of units allocated under the MCM is not associated with a municipality's existing transit accessibility (measured as the extent of HQTAs as of 2016). One possible reason is that SCAG measures transit accessibility as the projected local population within planned HQTAs in 2045. We chose to evaluate the relationship between allocation outcomes and existing HQTAs because the actual locations of HQTAs better capture existing needs for housing and transit services. Prior research suggests that future transit availability provides useful guidance for some planning and development activities (Kim & Li, 2020). Nevertheless, the future distribution of HQTAs depends on policies and programs that are implemented by multiple agencies confronting myriad constraints and uncertainties.

In short, our results suggest that an MCM may be unnecessarily complex for the purpose of generating housing allocations, and that the simpler MBLR has two advantages over the MCM. First, while both the MCM and the MBLR assign more housing units to areas with higher jobs accessibility, the MBLR can achieve this goal with far lower administrative burden. Second, the MBLR promotes access to opportunity more equitably than the MCM, which assigns fewer units to high income areas compared to lower income areas.

Our results also bolster prior claims that COGs should rely more on publicly available data from external sources (versus collected local input and internal projections) in the allocation process (Osterberg, 2020). The technical tasks demanded by an MCM not only increase administrative burdens but could also lead to counterproductive policies due to constraints related to knowledge and information, such as difficulties with determining the "best" formula or choosing the appropriate indicators.

It should be also noted that unlike the MCM, the 20% Rule and the MBLR do not segment allocations by income level (e.g., into categories such as low-income and moderate-income). If total housing targets were assigned without any affordability requirements, a local jurisdiction may simply try to fulfill its targets by planning for or permitting mostly market-rate units. The simplest adaption to avoid this outcome would be to apply HCD's determination of housing needs for each income category for the SCAG region.[16] A more complex, but potentially more effective approach would give powerful incentives for permitting below-market-rate housing, in the form of reduced obligations to accommodate market-rate housing. One possible strategy would be to allow one below-market-rate housing unit to count for multiple market-rate units, for the purpose of fulfilling housing targets.[17] For example, one extremely low-income unit (affordable at 0 to 30 percent of AMI) could count for four market-rate units, one very low-income unit (affordable at 30 to 50 percent of AMI) could count for three units, one low-income unit (affordable at 50 to 80 percent of AMI) could count for two units, and one moderate-income unit

[16] Under this approach, each local jurisdiction in the SCAG region would be required to accommodate approximately 26, 15, 17, and 42 percent of total housing allocations as very low-, low-, moderate-, and above moderate-income units (see McCauley, 2019).

[17] Elmendorf et al. (2020) propose that local governments should receive fractional credits toward their BMR targets for each market-rate unit permitted/built, based on the rationale that adding new market-rate housing would potentially trigger some downward filtering of housing, increasing access to lower priced units within the region.

(affordable at 80 to 120 percent of AMI) could count for 1.5 units. Alternatively, for municipalities that fall short of their housing targets, the state could require minimum percentages of new construction, for example, 10, 15, and 25 percent, to be extremely low-, very low-, and low-income units. These numbers are simply illustrative. State agencies can analyze the additional costs associated with more stringent affordability requirements in order to more finely calibrate the incentives or the set-aside requirements for new development. State agencies could also delegate this task to regional planning agencies.

Analysis 2: Implementation Scenarios

In our second analysis, we consider various implementation scenarios developed based on different ways that housing targets could be allocated and enforced in the cities of Orange and Fullerton in Orange County (Figure 1), which were selected because they both have high-quality transit service (e.g., commuter rail) and are accessible to jobs. Therefore, we can compare how two potential ways of enforcing the housing allocations detailed below – local general plan standards and targeted zoning override in transit- or jobs-rich locations – would produce different development patterns within each city, As Table 6 indicates, these cities are similar with respect to several key indicators used in the previous analysis: population size, median household income, coverage of HQTA area, and the number of jobs within 45 minutes auto travel time.

Notably, although the cities of Orange and Fullerton share many relevant characteristics, they received markedly different allocations under SCAG's MCM — a total of 13,180 units were assigned to Fullerton, and only 3,927 units were assigned to Orange. Therefore, different enforcement mechanisms would have different implications for attaining the allocated housing targets in the two cities. This large discrepancy is due to a "residual" adjustment factor in SCAG's MCM, which is intended to promote the statutory objective of affirmatively furthering fair housing (SCAG, 2020b, pp. 10-12).[18] In principle, applying the residual adjustment factor could help address disparities in housing needs and in access to opportunity by reducing the number of housing units that disadvantaged communities must accommodate and increasing the obligations for non-disadvantaged communities. On the other hand, the residual adjustment process may undermine the goal of allocating units to jurisdictions with good access to transit and jobs, and – as the case study demonstrates – it has created imbalances between some cities with similar socioeconomic conditions. Moreover, it may magnify the challenges for some cities to provide sufficient zoned capacity to accommodate their housing target allocations.

[18] Specifically, SCAG first identified a group of disadvantaged cities, which are those with over 50 percent of their populations in very low resource areas, as determined by the California Tax Credit Allocation Committee (TCAC)/HCD Opportunity Indices. This composite measure incorporates indicators such as poverty levels, low wage job proximity, math and reading proficiency, and pollution levels. Next, SCAG developed a factor called residual needs for these disadvantaged cities. These residual needs were subtracted from the disadvantaged cities' allocations and redistributed to non-disadvantaged cities within the same county. After deducting the residual needs from the identified disadvantaged communities, the units allocated to these communities are essentially capped at the levels that can accommodate their projected growth in the number of households between 2020 and 2045, which comes from SCAG's growth forecast based on local input solicited in preparing its final *Connect SoCal* regional plan. See SCAG's *Demographics and Growth Forecast* adopted on September 3, 2020, available at https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf?1606001579.

Table 6. Selected Characteristics of the Cities of Fullerton and Orange

	Fullerton	Orange
Total population (2010)	135,161	136,416
% land in HQTA (2016)	28.55	29.01
Jobs within 45 minutes auto travel time (2010)	465,517	394,066
Median household income (in thousands)	71.66	83.50
% below poverty level	14.91	12.48
% non-Hispanic white	32.97	45.01
% Single-family detached homes	51.45	55.76

Sources: U.S. Census Bureau (n.d.-a, n.d.-b); SCAG Open Data Portal (n.d.); U.S. Environmental Protection Agency (2014).

Our implementation scenarios for the cities of Orange and Fullerton consist of different combinations of allocation and enforcement mechanisms. We assess the scenarios that allocate housing targets to the municipalities based on the MCM and the MBLR described in the previous analysis. We then estimate potential development outcomes under varying enforcement mechanisms – different ways for state agencies and private entities (e.g., non-governmental organizations and housing developers) to ensure that local land use and zoning policies accommodate the allocated units.

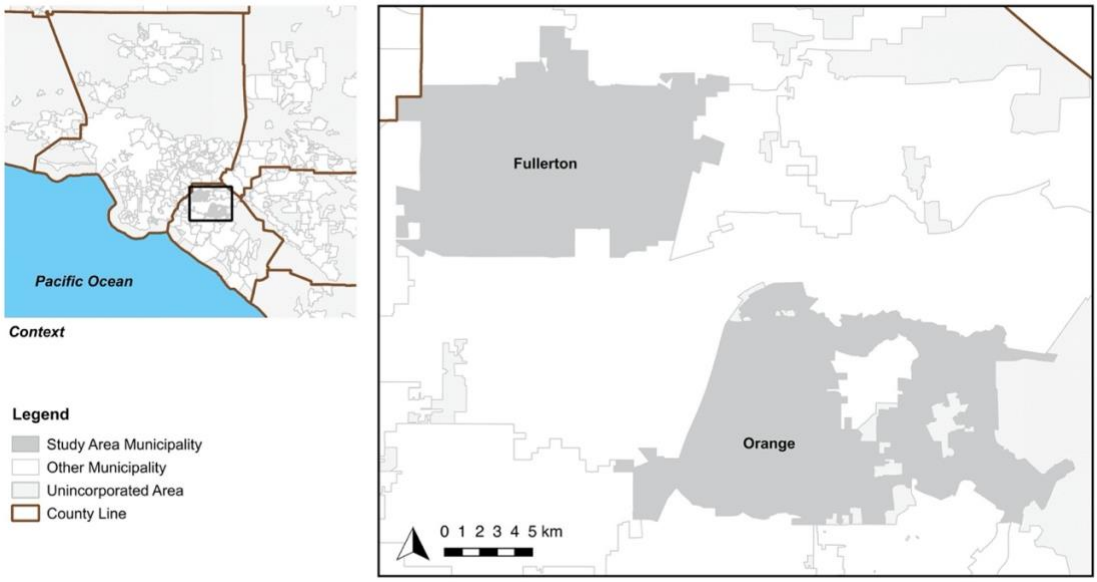

Figure 1. Study Area

Developing Implementation Scenarios

The implementation scenarios cover two potential enforcement mechanisms: *general plan standards* and *targeted zoning overrides*. For both implementation scenarios, we use SCAG's 2016 parcel-level data on zoning and land use, updated as of November 2018, to estimate the number of units that could potentially be developed in each city.[19]

Under the first enforcement mechanism, local general plan standards ensure that a local jurisdiction can fulfill its obligation to accommodate the allocated housing units. For the purpose of developing an implementation scenario, we assume that housing developers are entitled to build multifamily housing on land designated for this use in local general plans. Under the Housing Element law, local jurisdictions must update the housing and land use elements in their general plans to provide adequate capacity for the development of the housing allocations. In principle, land uses authorized in zoning ordinances must be compatible with general plan designations.[20] In practice, this is not always the case. For example, in our two case study cities, zoning classifications are compatible with over 99 percent of the multifamily residential (MFR) land area in Fullerton's general plan but with only 78 percent of the areas designated as MFR and mixed-residential in Orange's general plan.[21] Local jurisdictions can also adopt specific plans as a tool to implement the general plans for a defined area. Because both the cities of Fullerton and Orange are general law cities, their specific plans must be consistent with their adopted general plans (Cal. Gov. Code, §65454). Because we do not know how local governments will update their general plan land use and zoning designations for the 2021-2029 planning period, we estimate the development potential of the parcels currently planned for MFR use in the general and specific plans. This estimate provides a baseline to evaluate the extent to which a given municipality *could* meet its housing targets.

The second enforcement mechanism is based on permitting *targeted* zoning overrides in transit- or jobs-rich areas — an approach that has been proposed, but not adopted, in California. Prior research provides evidence that zoning overrides prompt local governments to collaborate with developers in order to facilitate housing development while retaining a measure of control over development (Goetz & Wang, 2020; Graddy & Bostic, 2010). A targeted zoning override differs from the zoning overrides adopted in the Northeastern states discussed earlier. These states do not prescribe the types of locations where a zoning override is allowed — such overrides can be requested anywhere in non-compliant municipalities on an *ad hoc* basis by developers of qualifying projects. By contrast, in California, there have been legislative proposals, such as Senate Bill (SB) 50, to allow targeted zoning overrides in areas near transit stops and selected bus corridors, as well as designated jobs-rich areas. Although SB 50 was not enacted, state officials and lawmakers continue to assess ways to overcome local

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[19] Retrieved from SCAG Open Data Portal: http://gisdata-scag.opendata.arcgis.com/datasets/8b0974afe5164f37999686021555329e_0

[20] California state law limits the ability of jurisdictions to deny, or reduce the density of, proposed projects that comply with local general plan, zoning, and subdivision standards (Cal. Gov. Code, §65589.5(j)).

[21] Over a hundred acres of Orange's planned MFR area are not zoned for MFR, including nearly 60 acres designated as Planned Community (PC) on the zoning map of the City of Orange. Although the established PC districts should conform to general plan land use, which is MFR, these areas are currently used for single-family residential, local parks and recreation, and other types of open space. (See Orange Municipal Code Title 17 (Zoning), Chapter 17.26 - Planned Community District. Retrieved from https://library.municode.com/ca/orange/codes/code_of_ordinances?nodeId=TIT17ZO_CH17.26PLCODI.)

regulatory barriers to housing development, particularly near transit and job centers. In this analysis, we define transit- or jobs-rich areas as parcels either (1) with at least 30 percent of the land in an HQTA as of 2016 or (2) located in census block groups with the number of jobs within a 45-minute drive above the 75th percentile of the county-wide distribution in 2010.[22]

The two enforcement mechanisms thus focus on different areas within a city. The procedure to estimate the development potential under each enforcement mechanism is described in Appendix 4. Table 7 shows the distribution of the land parcel area, as identified in SCAG's data, by general and specific plan land use category and zoning district designation in the cities of Fullerton and Orange. Approximately 56 percent of the total parcel area in Fullerton and 44 percent of the total parcel area in Orange are designated in the general plans and specific plans for single-family residential use (Rows (1) and (5)). Fullerton's general plan designates approximately 10 percent of the parcel area for MFR development (Row (2)). Orange's general plan designates about 13 percent of the parcel area as either MFR (Row (2)) or mixed residential, where MFR development is allowed (Row (3)). We estimate the development potential on these parcels to assess whether the general plan-based approach can provide sufficient capacity to accommodate the assigned housing targets.[23] Alternatively, if targeted zoning overrides are allowed in transit- or jobs-rich areas, over 35 percent of the total parcel area in both cities that are not zoned for MFR use (Rows (10) and (12)) can potentially be (re)developed to meet the housing targets.

Table 7. Distribution of Parcels by Planned Land Use and Zoning Designation in Transit/Jobs-rich Areas

	City of Fullerton		City of Orange	
	Area (acres)	% of total	Area (acres)	% of total
All Parcels in City	11,768	100.0	13,456	100.0
Planned land use				
Total General Plan Area	*11,134*	*94.6*	*13,385*	*99.5*
(1) Single Family Residential	6,220	52.9	5,843	43.4
(2) Multifamily Residential	**1,169**	**9.9**	**586**	**4.4**
(3) Mixed Residential	**0**	**0.0**	**1,149**	**8.5**
(4) Non-Residential	3,745	31.8	5,807	43.2
Total Specific Plan Area	*634*	*5.4*	*71*	*0.5*
(5) Single Family Residential	366	3.1	11	0.1
(6) Multifamily Residential	**20**	**0.2**	4	0.0

[22] We use a countywide distribution instead of regional distribution due to the large size and diversity of the SCAG region.

[23] Given the relatively frequent use of specific planning in the City of Fullerton, we include parcels designated for or allowing multifamily development under the city's specific plans (Rows (6)-(8)) when estimating the total development potential for the City of Fullerton.

(7) Mixed Residential	**53**	**0.4**	3	0.0
(8) Mixed Residential and Commercial	**121**	**1.0**	27	0.2
(9) Non-Residential	74	0.6	27	0.2
Zoning				
Total Transit- or Jobs-rich Area	*4,963*	*42.2*	*5,991*	*44.5*
(10) Single Family Residential	**1,653**	**14.0**	**2,231**	**16.6**
(11) Multifamily Residential	773	6.6	852	6.3
(12) Non-Residential	**2,537**	**21.6**	**2,908**	**21.6**

Note. Parcels for which development potential is estimated in **Error! Reference source not found.** are shown in bold text.

Source: SCAG Open Data Portal (n.d.); U.S. Environmental Protection Agency (2014).

Our estimates of potential development outcomes are based on simplified assumptions about density and development probability. For each enforcement mechanism, we consider a low-density scenario (involving residential densities of 15 units/acre) and a high-density scenario (25 units/acre). We further consider different development probabilities when estimating the development potential.[24] Our analysis focuses on parcels that — under our hypothetical enforcement mechanisms — would have relatively low regulatory barriers to multifamily development because these parcels are either planned for MFR development under the general plan standards or the applicable zoning could be bypassed by qualifying developers under a targeted zoning override mechanism. Although it is plausible that these parcels could be suitable for new or infill development, we do not know whether these sites will be made available for development by their current owners. Our analysis simply establishes a starting point for evaluating the prospect of building the targeted number of housing units and sheds light on the accessibility outcomes at the sub-jurisdictional level associated with different enforcement methods.

Results

The allocation portion of our implementation scenarios vary significantly, due largely to SCAG's residual adjustment factor associated, which substantially reduces the allocation for the City of Orange and modestly increases the allocation for Fullerton under the MCM. Fullerton's total allocation under SCAG's MCM (13,180 units) is about 10% *higher* than its allocation under the hypothetical MBLR (11,967 units), whereas Orange's total allocation under SCAG's MCM (3,927) is about 65% *lower* than its allocation under the MBLR (11,278 units). This large disparity, attributable to SCAG's purported equity adjustment, is striking given the socioeconomic similarities of the two cities (Table 6). Below, we compare potential implementation outcomes in the two cities under current general plan standards and under a hypothetical zoning override. We then discuss how these two enforcement mechanisms could differentially affect the location of new development within each city.

[24] Elmendorf et al. (2020) argue that local governments should account for the development probabilities for sites deemed suitable for accommodating housing development. While such probabilities are just rough estimates, they allow cities to provide more realistic assessments of site capacity.

Implementation under Current General Plan Standards

In both cities, the estimated development potential under their current general plan standards is much lower than that under targeted zoning override. Under Fullerton's current general plan standards, the city has no plausible way to meet the targets under either the MCM *or* the MBLR. As Table 8 indicates, Fullerton's estimated development potential based on its current general plan standards falls far behind even the lower housing target of the hypothetical MBLR. Thus, Fullerton will likely have to make substantial changes to its general plan land use designations to identify more land for MFR development in the upcoming planning period, unless the average density of new MFR development is significantly higher than 25 units/acre. By contrast, due to the residual adjustment factor, the City of Orange could potentially exceed the MCM with development at an average of 25 units/acre and when the development probability is relatively high (e.g., 30 percent).

Implementation with a Zoning Override

Allowing a zoning override in transit- or jobs-rich areas would provide higher development potential in most of the scenarios we constructed. As an illustrative example, we use different levels of development probabilities as rough indications of market potentials. To the extent that housing markets in the cites' transit- or jobs-rich areas are moderately strong (i.e., with a development probability of 20 percent or higher), both cities can fulfill their housing targets under both allocation methods by authorizing development at 25 units/acre. When the development probability is high enough (e.g., 30 percent), the two cities can also meet the housing targets (except the MCM allocation to the City of Fullerton) by building at 15 units/acre. In the case of the City of Orange, given its relatively low MCM allocation, the estimated development potential in each of the scenarios allowing targeted zoning override far exceeds the housing target. Such an enforcement mechanism may not be effective if the demand for housing is relatively weak in the city's transit- or jobs-rich areas. As shown in the case of Fullerton, which receives relatively high housing targets under both allocation methods, the city would likely be unable to fulfill these targets if the average development probability is low (<10 percent) in these areas.

Table 8. Estimated Development Potential and Attainment of Housing Targets

	City of Fullerton			City of Orange		
Enforcement method and assumptions	Potential units	MCM target (13,180 units)	MBLR target (11,967 units)	Potential units	MCM target (3,927 units)	MBLR target (11,278 units)
(1) General plan standards						
Low (density=15 units/acre)						
10% development prob.	423	X	X	854	X	X
20% development prob.	846	X	X	1,704	X	X
30% development prob.	1,270	X	X	2,563	X	X
High (density=25 units/acre)						
10% development prob.	791	X	X	1,560	X	X
20% development prob.	1,581	X	X	3,120	X	X
30% development prob.	2,372	X	X	4,681	√	X
(2) Targeted zoning override						
Low (density=15 units/acre)						
10% development prob.	4,004	X	X	5,806	√	X
20% development prob.	8,009	X	X	11,611	√	√
30% development prob.	12,013	X	√	17,417	√	√
High (density=25 units/acre)						
10% development prob.	7,346	X	X	10,376	√	X
20% development prob.	14,692	√	√	20,751	√	√
30% development prob.	22,037	√	√	31,127	√	√

Note. √ denotes that potential units developed in a given implementation scenario meet the allocated housing target. X denotes that potential units developed in a given implementation scenario do not meet the allocated housing target.

Sources: SCAG Open Data Portal (n.d.); U.S. Environmental Protection Agency (2014).

Different Enforcement Mechanisms Could Affect the Location of New Development, Influencing Accessibility Outcomes

In both Fullerton and Orange, parcels designated for multifamily development in the general plans are scattered across the cities and do not necessarily have good access to jobs or transit. The extent to which a general plan-based approach can improve accessibility varies by city. As illustrated in Figure 2, the City of Fullerton has designated a large proportion of land near the Fullerton Transportation Center (a Metrolink passenger rail and bus station) for MFR use in its current general and specific plans. While these are currently not used for MFR, future development on these parcels – particularly for BMR projects – would improve affordability and accessibility in the city. On the other hand, the current general plan of the City of Orange has designated a considerable amount of land for MFR development *outside* the identified transit- or jobs-rich areas (Figure 3). Table 9 summarizes the accessibility outcomes associated with different enforcement mechanisms. For example, assuming the parcels designated for or allowing MFR use in the current general plans are developed at 25 units/acre, approximately 62 percent of the new units in Fullerton and 34 percent in Orange, will be located in the transit- or jobs-rich areas as defined above.

For each city, we examine additional indicators related to accessibility and walkability under a particular enforcement mechanism (Table 9). The transit- or jobs-rich areas defined above focus on the proximity of high-quality transit services as well as jobs accessibility by *car*. We develop an alternative jobs accessibility measure based on commuting by *transit* and walking and calculated the percentage of potential new housing development under a given enforcement mechanism located in areas of high jobs accessibility using these modes. We define these areas as census block groups with the number of jobs reachable within a 45-minute transit and walking commute above the 75th percentile of the county-wide distribution. We also estimate a city-wide walkability score calculated as the average of the block group-level walkability indices, retrieved from the National Walkability Index provided by the EPA, weighted by the estimated development potential under a given enforcement mechanism. The walkability scores range from 1 to 20, and higher scores indicate higher walk trip likelihood.

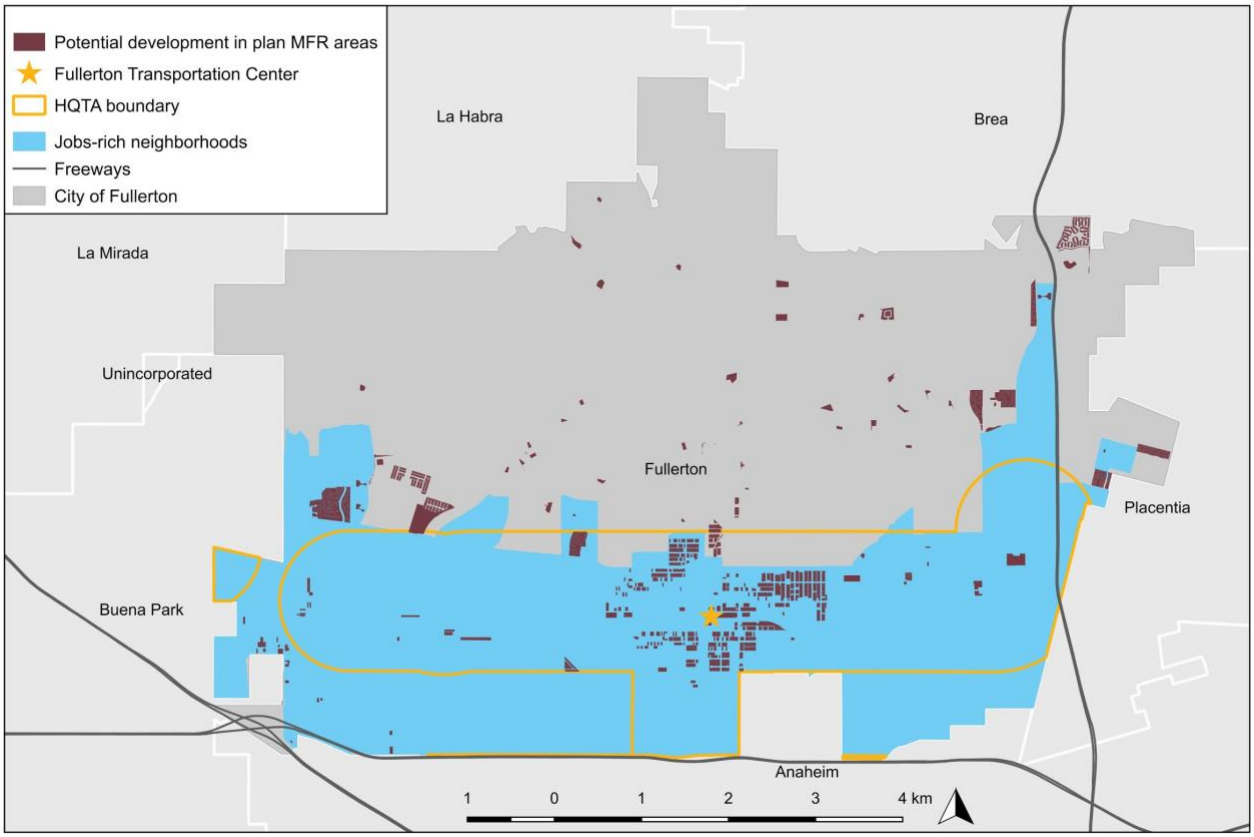

Figure 2. Potential Development in Plan Multifamily Residential (MFR) Areas and Accessibility of Jobs and Transit, City of Fullerton

Note. Jobs-rich neighborhoods are defined as census block groups with the number of jobs within a 45-minute drive above the 75th percentile of the county-wide distribution in 2010. This map illustrates the potential development pattern of parcels that are currently *not* used for MFR but are planned for MFR development in the current general and specific plans of the City of Fullerton. It shows that planned land use in Fullerton concentrates MFR development near the Fullerton Transportation Center (a passenger rail and bus station).

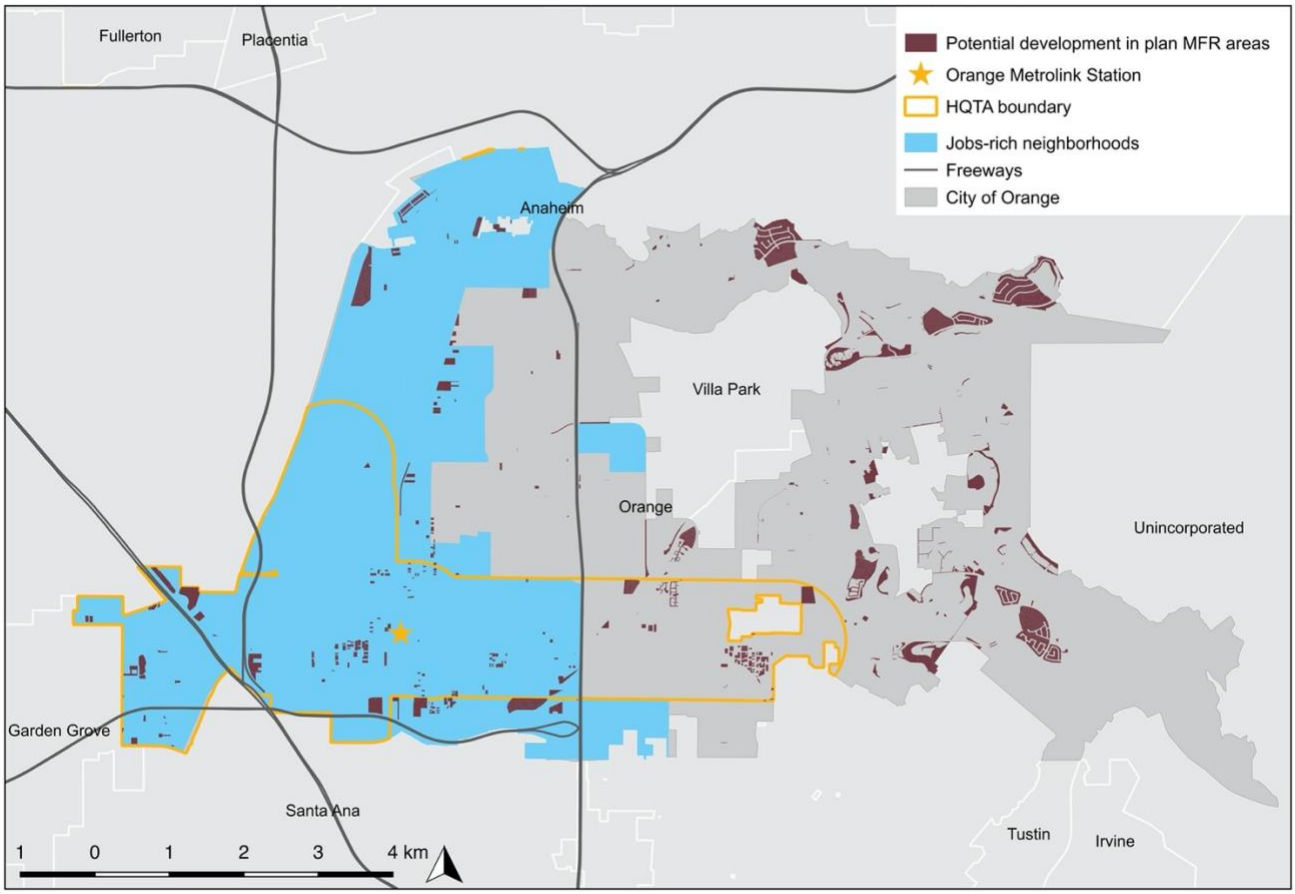

Figure 3. Potential Development in Plan Multifamily Residential (MFR) Areas and Accessibility of Jobs and Transit, City of Orange

Note. This map illustrates the potential development pattern of parcels that are currently *not* used for MFR but are planned for MFR development in the current general and specific plans of the City of Orange. It shows that the City of Orange has designated a considerable amount of land for MFR use outside the HQTA boundary or jobs-rich areas (see note for Figure 2).

As shown in Table 9, for the City of Orange, we estimate approximately 80 percent of the new units facilitated by targeted zoning overrides would be sited in areas with high employment accessibility by transit and walking. By contrast, the current general plan land use designations of the City of Orange would permit a substantially lower share of new units (26 percent) in these areas. The walkability scores also suggest that allowing targeted zoning overrides would better promote a walkable community in the City of Orange. In the City of Fullerton, higher walkability scores are achieved under current general plan standards; however, better accessibility outcomes are likely to be achieved under targeted zoning overrides in terms of the proximity of high-quality transit and employment accessibility by car, transit, and walking.

Table 9. Accessibility Outcomes by Enforcement Mechanism

	Targeted zoning override		General plan standards	
	Low density	High density	Low density	High density
Fullerton				
% in transit- or jobs-rich areas	100	100	61	62
% in areas of high accessibility by transit and walking	50	48	36	37
City-wide walkability score	14	14	15	15
Orange				
% in transit- or jobs-rich areas	100	100	33	34
% in areas of high accessibility by transit and walking	82	79	26	26
City-wide walkability score	14	14	10	10

Note. A low-density scenario assumes density at 15 units/acre; and a high-density scenario assumes density at 25 units/acre. Transit- or jobs-rich areas are either: (1) parcels with at least 30 percent of the land in a HQTA as of 2016, or (2) census block groups with the number of jobs within a 45-minute drive above the 75th percentile of the county-wide distribution in 2010. Areas of high accessibility by transit and walking are census block groups with the number of jobs reachable within a 45-minute transit and walking commute above the 75th percentile of the county-wide distribution. City-wide walkability scores are the average of the block group-level walkability indices, retrieved from the National Walkability Index provided by the EPA, weighted by the estimated development potential under a given enforcement mechanism.

Sources: SCAG Open Data Portal (n.d.); U.S. Environmental Protection Agency (2014).

Conclusion

Our study suggests that allocating housing targets to local governments based on a relatively simple, modified bright-line rule could potentially guide housing development to transit- or jobs- rich areas more equitably and with lower administrative burdens than the MCM developed by SCAG to allocate housing targets for the upcoming planning cycle. A more complex allocation method that attempts to quantify and incorporate multiple policy objectives into the decision-making process may be unnecessary and, possibly, counterproductive. Our assessments of different allocation scenarios in the SCAG region are consistent with prior claims that the current target allocation mechanism adopted in California can be simplified and improved. Although an MCM can — in principle — tailor housing targets to specific policy priorities, in practice it is prone to myriad technical difficulties and extensive political wrangling. As a result, an MCM may not lead to outcomes consistent with state objectives. The findings that the MCM allocations are systematically lower in high-income cities and that the allocations are not robustly correlated with transit accessibility suggest that MCMs for housing allocations may be vulnerable to these problems. We also find that the MCM has created imbalanced allocations among some cities with similar socioeconomic conditions, as illustrated by our comparison of the City of Fullerton to the City of Orange.

The proposed modified bright-line rule is one way of improving the target allocation process. The current allocation process consists of two fairly complex procedures. First, HCD determines the total target for each region, in consultation with regional COGs. Second, each COG develops and implements a method to allocate its regional target to local governments. State law prescribes multiple criteria for *both* procedures and thus compels COGs to employ the complex allocation methods such as the MCM. Rather than prescribe a multi-agency, multi-criteria target allocation process, state law could simplify the allocation mechanism. For instance, as shown in this study, it is possible to modify the fixed-percentage approach used in certain Northeastern states by incorporating one additional criterion — employment accessibility — using a simple calculation with readily available national data. This approach is analytically and administratively easy, limiting the kinds of lobbying that may stymie some objectives of the housing allocation process, such as guiding growth to high-opportunity areas.

California can also better promote accessibility at the neighborhood level by enhancing enforcement of the allocated housing targets. Our analysis of alternative implementation scenarios using two Southern California cities suggests that current enforcement mechanisms may be insufficient to ensure that local governments provide adequate sites to accommodate the housing allocations and promote housing development in transit- or jobs-rich areas. One possible reason is that HCD enforces the housing targets primarily through assessing whether local jurisdictions have demonstrated sufficient planned capacity to accommodate the allocated units in the land use and housing elements of their general plans. Local planning practices vary considerably from city to city, and areas identified as suitable for future development by local governments may not be accessible to transit infrastructure and employment. Allowing zoning overrides in areas near transit and job centers, a regulatory process that has been considered in the state Legislature, could potentially address this issue, although a comprehensive assessment of such new legislation is beyond the scope of this study.

Our analyses of the accessibility outcomes associated with the allocation mechanisms focus on cities in the SCAG region rather than all local jurisdictions in the state. Nevertheless, our analyses show the potential limitations of using an MCM to allocate housing targets to local governments in a large and diverse metropolitan area like the

SCAG region. Existing research in other regions has also found that the various objectives of the Housing Element law are not always consistently promoted by COGs' allocation methods.[25] Although a single optimal allocation may not exist, our analysis reveals that a relatively simple allocation may align better with the state's asserted policy goals *and* be less susceptible to technical challenges and political wrangling. Future studies should extend this analysis to other regions and assess the outcomes associated with simple allocation methods.

Future analysis should also assess the suitability of rezoning and the development potential of residential and mixed-use sites identified in local plans for projects at different levels of affordability. Such analyses would require better data at the parcel level compiled through various sources. HCD and the state Legislature could improve the collection of data by providing grants and technical assistance to help local communities to digitize and maintain up-to-date parcel-level records, such as general plan and zoning designations, building permits issued, new units added, the availability of public infrastructure, etc. HCD and regional planning agencies could collect and further compile the local records with data related to accessibility and opportunity. Some regional planning agencies, such as SCAG, have been improving their parcel-level data by adding attributes that can help local jurisdictions identify and analyze their sites. HCD could facilitate this process in the state by continuing to develop standards for collecting and compiling such data.

[25] A recent study by Osterberg (2020) found that in both the SCAG and the San Diego Association of Governments (SANDAG) regions, compared to higher-income jurisdictions, low-income jurisdictions are assigned higher shares of housing targets relative to their shares of regional jobs.

Appendix 1. Comparison of State Housing Allocation Process

This analysis explores how California's housing allocation process differs from other state approaches. The purpose of this analysis is to identify different state approaches to the allocation and enforcement of housing targets. These different approaches provide a foundation for developing the different allocation and implementation scenarios in our main analyses, which examine how job and transit accessibility outcomes might differ under varying allocation and enforcement mechanisms.

We find that California's housing target allocation method is relatively complex compared to the bright-line rule adopted by the three Northeastern states examined, which all set housing targets as a flat percentage of local housing stock. Moreover, compared to the three Northeastern states, California does not have a strong method for enforcing the allocated housing targets.

Data and Methods

We surveyed state laws and regulations governing housing planning and development for all 50 U.S. states. Our data primarily come from Westlaw and state legislature websites. Supplemental data were obtained from the literature, technical assistance materials, communication among different agencies (e.g., memos and letters), and other publicly available documents. The survey allows us to identify whether a state allocates housing targets to local governments, and if it does, how these targets are allocated and what enforcement mechanisms are used to ensure that local governments fulfill their obligations to accommodate the allocated units.

We adopted a multiple case study design that compared the housing allocation process between California and three Northeastern states that are grouped together as a single unit of analysis: Connecticut, Massachusetts, and Rhode Island. The major reason that these three states were selected is because they present interesting alternatives to California's approach. Specifically, they all have adopted simple bright-line rules to allocate housing targets to local governments and allow zoning overrides for qualifying projects in jurisdictions that have not accommodated their housing allocations (Fisher & Marantz, 2015). We compare the essential differences in the allocation and enforcement mechanisms between California's approach and that of the three Northeastern states analyzed. Drawing on the findings of the comparative analysis, we develop different allocation scenarios and implementation scenarios, which are addressed in our main analyses. The alternative allocation scenarios use different methods to allocate housing targets. The implementation scenarios are characterized by different combinations of allocation and enforcement methods. Prior studies have discussed the attributes of the housing allocation process in these states (Elmendorf, 2019; Monkkonen et al., 2019); nevertheless, much work remains to be done in connecting the variations in the implementation mechanisms to different housing development and accessibility outcomes.

It should be noted that our survey of state housing laws and regulations finds that housing target allocation processes (or similar housing planning regimes) are adopted in several other states, including Minnesota, Illinois,

New Jersey, Oregon, and Washington. Our finding is consistent with Elmendorf's (2020, p. 95) observation that such state efforts capture "the principal means by which parent states of expensive local governments have undertaken to regulate locally erected barriers to new housing." These states were not selected for our comparative analysis because their housing allocation processes either have at least one attribute, other than the allocation and enforcement mechanisms, that is distinct from California's approach, or their housing targets are only weakly (or not) enforced.[26]

Results

We focus on two essential differences between California's approach and the shared attributes the approaches used by Connecticut, Massachusetts, and Rhode Island. First, the Northeastern states analyzed use bright-line rules to allocate housing targets to local governments, whereas California's Housing Element law prescribes a much more complex housing target allocation process. Procedurally, HCD is responsible for determining the housing targets at the regional level, and each regional Council of Governments (COG) may coordinate with HCD to arrive at its final regional targets. This process is referred to as the Regional Housing Needs Assessment (RHNA). Each COG then develops its own methodology to allocate the total RHNA among its constituent local jurisdictions. California state law also provides localities with a procedural framework for appealing the housing targets they are assigned. Appeals are reviewed by the relevant COG, and for all successful appeals, the COG must reallocate the reduced targets back to the region. From a technical perspective, state law requires that COGs incorporate various factors in their allocation methodologies, including local jobs-housing relationships and opportunities to increase the use of public transit (Cal. Gov. Code, §65584.04(e)). In contrast, the three Northeastern states do not set targets for future housing growth. They simply require that all local governments maintain a target share of BMR units by setting housing targets at 10 percent of a municipality's existing housing stock, as reported in the latest federal decennial census.[27] Municipalities may fulfill the housing targets with exclusively subsidized units (i.e., below-market-rate) or combination of below-market-rate and market-rate units.[28]

The second essential difference between California's approach and the three Northeastern states concerns enforcement of housing targets. In California, the housing element process serves as the primary enforcement mechanism. Each California city and county is required to prepare a housing element, as part of the general plan, to outline its strategy for accommodating the development of the allocated housing units. To meet this requirement, each locality must identify sufficient sites available and suitable for residential development in its

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[26] While New Jersey has a well-known state fair-share program, this regime was initiated by judicial action and is now administered by the state Supreme Court. In Minnesota, Illinois, and Washington, the provisions for enforcement of the housing targets are weak relative to those of the states that we analyzed. Last, Oregon has prescribed housing type mix and minimum density requirements for new housing development, but it does not allocate specific housing targets to local jurisdictions. Policy alternatives concerning density and mix standards for new construction are beyond the scope of this study.

[27] Conn. Gen. Stat. Ann. § 8-30g (2019); Mass. Gen. Laws Ann. ch. 40B, §§ 20-23 (2019); R.I. Gen. Laws Ann. §§ 45-53-3 & 45-53-4 (2019).

[28] For example, municipalities in Massachusetts can fulfill the 10 percent allocation with a combination of deed-restricted below-market-rate housing (affordable at 80 percent of AMI and market-rate rental units located in buildings where at least 20 percent of the units are affordable at 50 percent of AMI or at least 25 percent of the units are affordable at 80 percent of AMI.

housing element site inventory. If the locality is not able to find adequate sites that provide the capacity to accommodate the housing targets, it must identify additional sites, rezone them within three years, and allow residential use by right on these sites for qualifying mixed-income projects.[29] HCD assesses whether the land use and housing elements of cities' and counties' general plans demonstrate that these jurisdictions have sufficient planned capacity for their housing allocations.

Another enforcement mechanism of California's housing target allocation process is the developer or citizen lawsuit under the Housing Accountability Act (HAA). Private entities, such as non-governmental organizations and housing developers, can sue local governments that fail to comply with the Housing Element law. Historically, developers bore the burden of proof, and courts generally gave deference to local decisions (Elmendorf et al., 2020). The revised HAA gives less deference to local planning decisions and applies to all housing development projects and to charter cities (Cal. Gov. Code, §65589.5(g)). In particular, localities bear the burden of proof in defending against the HAA claims. State law limits the ability of jurisdictions to deny, or reduce the density of, proposed projects that comply with local "objective standards," including those established in local housing elements, general plans, and zoning ordinances (Cal. Gov. Code, §65589.5(d)&(j)). There are also increased monetary penalties imposed on localities that fail to comply with the HAA (Cal. Gov. Code, §65589.5(k)(1)(B)(i)).[30]

In the three Northeastern states, zoning overrides are allowed for qualifying below-market rate and mixed-income projects in municipalities that have not reached the 10 percent threshold and do not qualify for a temporary safe harbor exemption. Specifically, if a local government denies a qualifying project, as defined in state laws, or approves the application with restrictions that would render the project economically infeasible, the developer can request an override of local land use regulations through an appeals procedure. The appeals procedure favors the developer in three ways (Marantz & Zheng, 2020). First, it is an expedited appeals procedure and thus can reduce costs related to delay and disruption in the development process. Second, local governments bear the burden of proof to defend their rejections of the proposed projects or the requirements they imposed. Last, prevailing developers are entitled to build the projects. With such a mechanism enabling housing developers to bypass local land use regulations, local governments are likely to be motivated to attain exemption by facilitating BMR housing developments that are acceptable to both developers and local officials. For example, developers and local governments in Massachusetts can collaborate to create "friendly" proposals that make economic sense to the developers and fit local development priorities (Goetz & Wang, 2020).

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[29] "By right" means that the project is not subject to conditional use permits or other types of discretionary local government review. Unless a subdivision is required, no review is required under the California Environmental Quality Act (CEQA) (Cal. Gov. Code, § 65583.2(i) (2020)). Qualifying projects are those in which at least 20 percent of the units are affordable to households earning less than 50 percent of AMI.

[30] In determining whether a proposed project is consistent with applicable local standards, localities must provide written documentation specifying the inconsistencies between the proposed project and the applicable local regulations (e.g., general plan and zoning standards). The court must impose a fine of at least $10,000 per unit on localities that denied or rendered infeasible housing developments without providing the required findings under the HAA.

Analysis

As described above, in comparison with other states, California's Housing Element law prescribes a complex way of allocating housing targets to local governments. The allocation of housing targets should promote efficient development patterns and help achieve greenhouse gas emission reduction goals. In response to statutory mandates, COGs such as SCAG have devised complex, multi-criteria methods (MCM) incorporating numerous accessibility and opportunity indicators to allocate the housing targets in order to promote these policy objectives.

In practice, however, several factors may hinder the allocation outcomes based on an MCM from effectively promoting the asserted objectives. First, an MCM demands complicated data collection and analytic tasks from regional planning staff. For example, each COG must develop its approach to operationalizing the statutorily required criteria, collect data from its constituent local governments, develop an allocation methodology, and explain in writing to HCD how each required criterion is accounted for and how the methodology furthers the statutory objectives. Even if an MCM can better tailor housing targets to state and regional policy goals, a simpler, less technical approach may be less prone to knowledge and information problems, such as difficulties with determining the "best" formula or choosing the appropriate indicators (Christiansen & Kerber, 2006). Second, because state law allows flexibility in interpreting and operationalizing the various criteria, there is likely to be variations in allocation methods used across the state. For example, unlike SCAG, the San Luis Obispo Council of Governments (SLOCOG) simply allocated the RHNA based on local population and employment data. In explaining how its approach sufficiently incorporates the factors outlined in state law, SLOCOG emphasized the strong correlation between multiple factors.[31] While a single optimal allocation may not exist, variation in allocation methods adopted by different COGs may lead to unbalanced progress toward meeting the housing needs of all Californians. Third, there are trade-offs involved in using indicators based on growth forecasts in devising an allocation methodology. On the one hand, projected development patterns, such as where transit services will be made available in the future, provides useful guidance for various types of planning and development activities (Kim & Li, 2020). On the other hand, growth forecasts are heavily influenced by local input, and the resulting allocation may be more prone to influence by local governments that are highly reluctant to accommodate growth. In contrast, a bright-line rule based on objective factors leaves little room for varying interpretation and limits the opportunities for lobbying and bargaining in the local political process.

By contrast, the three Northeastern states described above have adopted a simpler, more unified, allocation approach. The fixed-percentage threshold for BMR housing is established in state laws and has been used to guide housing development for decades. State agencies do not need to come up with additional methods to assign housing targets. They simply monitor and produce an annual update of the inventory of local BMR housing and determine local compliance based on each municipality's progress toward the 10 percent threshold. Therefore, several scholars have advocated for bright-line rules on the basis of administrative simplicity (Graddy and Bostic 2010; Monkkonen et al., 2019). In short, while a bright-line rule is not always methodologically superior to an

[31] SLOCOG indicates that "emphasis placed on employment in a given jurisdiction … is intended to support local and regional public transit and existing transportation infrastructure" (SLOCOG, 2019, p. 26). Available at: https://www.dropbox.com/s/stbw4b26apatv3f/_2019%20RHNA%20Plan_adopted_final.pdf?dl=0.

MCM, policymakers should be aware of the administrative burdens and technical difficulties associated with developing an MCM.

The effective implementation of California's housing target allocations also depends on local jurisdictions' ability and willingness to carry out general plan and housing element updates that will effectively accommodate the allocated units. Specifically, local jurisdictions must identify adequate sites suitable and available for the allocated units, and – if necessary – authorize higher residential density. Further, HCD requires local governments preparing the housing element site inventory to consider demand for affordable housing, as well as location factors such as access to transit and jobs.[32] The land use element of each jurisdiction's general plan is legally required to be consistent with the housing element, and thus provides a basis for assessing whether a municipality has identified sufficient land to accommodate housing targets. Local jurisdictions are required to adopt zoning regulations that are consistent with their general plans, though in practice zoning and general plans may be somewhat inconsistent. Recent changes to the housing element law would potentially strengthen the consistency requirement by compelling local jurisdictions to adopt complementary rezoning programs to provide adequate site capacity to accommodate their housing allocations. In this study, we assume that housing developers are entitled to build multifamily housing on land designated for this use in local general plans and consider the general plan standards as an enforcement mechanism.

It should be noted that HCD has limited capacity to ensure that local governments update their housing and land use elements as well as the zoning codes appropriately. Local governments may simply lack the capacity to bring their housing and land use elements into compliance by the statutory deadline. Moreover, HCD's certification does not necessarily mean that these local plans and ordinances are meaningfully updated. The myriad requirements for legal compliance of a housing element make evaluating the adequacy of a housing element extremely challenging. For example, local jurisdictions need to estimate the *realistic* development capacity of the sites they identify in their housing elements, and HCD recommends a list of factors to be considered when estimating the capacity.[33] Local governments may simply treat these factors as a mechanical checklist without accurately assessing whether the particular number of units can be realistically accommodated on each identified site. With limited knowledge of individual local jurisdictions, HCD may determine that a housing element is in compliance if all the factors are ostensibly discussed. Furthermore, rezoning is typically a multi-year process. For local jurisdictions that need to adopt rezoning programs to provide adequate sites, HCD must engage in continuous monitoring of the progress of these programs, and it is not clear whether HCD can effectively monitor the completion of rezoning by all local governments.

Finally, in addition to the general plan standards, there have been legislative attempts in California to allow zoning overrides in areas located near transit stops and selected bus corridors, as well as certain areas designated by HCD as "jobs-rich." If adopted, such targeted zoning overrides may serve as a powerful enforcement mechanism, as in the three Northeastern states discussed above. There is some evidence that such an approach prompts local governments to collaborate with developers and facilitate housing development, particularly in municipalities with strong housing markets, where developers have strong financial incentives to challenge local regulations that

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[32] See *HCD Memorandum: Housing Element Site Inventory Guidebook*, available at: https://www.hcd.ca.gov/community-development/housing-element/docs/Sites_inventory_memo_final06102020.pdf

[33] See *id*.

exclude multifamily housing (Fisher & Marantz, 2015; Goetz & Wang, 2020; Graddy & Bostic, 2010; Marantz & Zheng, 2018, 2020).

Appendix 2: Bayesian Model Averaging

We use the Bayesian model averaging (BMA) technique to assess the associations between allocation outcomes and local characteristics. BMA offers a systematic approach to checking the robustness of the relationships between the independent variables and the outcome variable to alternative specifications. One example is the use of BMA in the empirical research on the determinants of economic growth. The neoclassical Solow model (1956) and other new growth theories have identified a myriad of growth determinants. Model averaging techniques (and, particularly, BMA) have become one of the standard methods in testing different growth theories (Magnus et al., 2010; Masanjala & Papageorgiou, 2008; Sala-i-Martin et al., 2004).

For the purpose of assessing the associations between allocation outcomes and local characteristics, the BMA method offers two advantages. Methodologically, provided a set of local characteristics of interest, BMA uses a computational process that considers all possible configurations of these variables and gives the probability that a real (non-zero) relationship exists between the allocation outcomes and a particular variable. This probability is referred to as the inclusion probability. A higher inclusion probability indicates that the relationships identified through the BMA process are relatively robust to a multitude of configurations of the independent variables.[34] Substantively, local characteristics with relatively high inclusion probabilities are more likely to have a non-zero correlation with the allocation outcomes and can be thought of as more robust and important than those with lower probabilities. This information is particularly useful for evaluating the MCM, which accounts for numerous criteria related to accessibility and opportunity. For example, what are the most prominent relationships in the MCM scenario, and what are the implications for simplifying the allocation method?

The basic theory of BMA in a linear regression context is as follows (Montgomery & Nyhan, 2010). Let X denote a vector of *k* independent variables theorized to explain the outcome Y. Under a frequentist framework, we would estimate $Y = \beta X + \varepsilon$. However, we have a model space $M = [M_1, M_2, \ldots, M_q]$ consisting $q = 2^k$ possible model specifications, creating uncertainty about which is the optimal model. BMA instead takes this uncertainty into account by deriving a posterior probability $p(M_i|Y)$ for model M_i, which is the probability of obtaining M_i conditional on the observed data.[35] For a given coefficient β, conditional on a given outcome Y, the expected value is computed as follows:

$$E(\beta|Y) = \sum_{i=1}^{q} p(M_i|Y)E(\beta_i|M_i, Y)$$

[34] For example, the simplest configuration can be a univariate model with allocation outcomes as the dependent variable and the number of jobs within a 45-minute drive as the only independent variable. The most complicated configuration will include all local characteristics of interest on the right-hand side of the model. The conventional Ordinary Least Square (OLS) regression technique does not allow us to identify whether a detected relationship is robust to other specifications when there is a fixed set of independent variables.

[35] In Bayesian statistics, a posterior probability is obtained conditional on new information (e.g., a new set of data collected). The posterior probability updates the prior probability using Bayes' theorem and can be used as a prior probability in subsequent analyses. See Lynch, S. M. (2007). Basics of Bayesian Statistics. In *Introduction to Applied Bayesian Statistics and Estimation for Social Scientists* (pp. 47–75). Springer-Verlag. https://doi.org/10.1007/978-0-387-71265-9.

The estimated coefficient, also called the posterior mean, is the weighted expected value across all possible model specifications, with the weight being the posterior probability for each model. Similarly, the variances also take into account the uncertainty of model specification. For this study, we implement the BMA estimators in Stata using the package introduced by De Luca and Magnus (2011). This procedure returns the estimated coefficients, standard errors, *t* ratios (posterior mean/standard error), and posterior inclusion probabilities. Each variable's posterior inclusion probability is calculated as the sum of the posterior probabilities for all of the models including this variable. It gives the posterior probability that a variable is included in the model (i.e., has a non-zero coefficient) (Sala-i-Martin et al., 2004; Magnus et al., 2010). Therefore, the posterior inclusion probability indicates the relative importance of each independent variable. Prior research suggests that an independent variable is considered to be robustly correlated with the outcome if the absolute value of its *t* ratio is greater than one, or if its posterior inclusion probability is greater than 50 percent (Raftery, 1995). Masanjala and Papageorgiou (2008) used a threshold value of 1.3 for the *t* ratio, which is roughly equivalent to a 90 percent confidence interval in frequentist hypothesis testing.

Appendix 3. Data and Variables for Analysis 1

Table A3-1. Variable Definitions and Sources

Variable	Definition	Source
Total units (log): MCM	Natural log of housing units allocated under the MCM adopted by SCAG	(1)
Total units (log): 20% Rule	Natural log of housing units allocated under the 20% Rule	(2)
Total units (log): MBLR	Natural log of housing units allocated under the modified bright-line rule (MBLR)	(2), (5)
Very Low Income units (log)	Natural log of very low-income (VLI) units assigned to cities under the MCM	(1)
Low Income units (log)	Natural log of low-income (LI) units allocated under the MCM	(1)
Moderate Income units (log)	Natural log of moderate-income (MI) units allocated under the MCM	(1)
Market Rate units (log)	Natural log of above moderate-income (i.e., market-rate, or MR) units allocated under the MCM	(1)
Population (log)	Natural log of total population	(3)
Land area (2016, log)	Natural log of land area in 2016	(4)
HQTA (2016, log)	Natural log of land area in HQTA in 2016	(4)
Jobs within 45 minutes auto travel time (log)	Natural log of jobs within 45 minutes auto travel time in 2010	(5)
2nd MHI Quartile (dichotomous)	=1 for cities with median household income (MHI) between the 25th and 50th percentiles of the regional distribution	(3)
3rd MHI Quartile (dichotomous)	=1 for cities with MHI between the 50th and 75th percentiles of the regional distribution	(3)
4th MHI Quartile (dichotomous)	Equal to 1 for cities with MHI above the 75th percentile of the regional distribution	(3)
% Non-Hispanic white	Percentage of population identified as non-Hispanic white	(3)
% Black	Percentage of population identified as Black or African American	(3)
% Asian	Percentage of population identified as Asian	(3)
% Single-family detached homes	Percentage of housing units that are single-family detached homes	(3)
% Senior	Percentage of population aged 65 or older	(3)

Sources: (1) SCAG (2020a); (2) U.S. Census Bureau (n.d.-a); (3) U.S. Census Bureau (n.d.-b); (4) SCAG Open Data Portal (n.d.); (5) U.S. Environmental Protection Agency (2014).

Table A3-2. Summary Statistics

Variable	Mean	SD	Median	*Min*	*Max*	N
Total units (log): MCM	7.49	1.58	7.79	2.08	13.03	191
Very Low Income units (log)	6.17	1.56	6.50	1.39	11.66	191
Low Income units (log)	5.64	1.55	5.95	1.39	11.14	191
Moderate Income units (log)	5.71	1.58	5.98	0.00	11.22	191
Marker Rate units (log)	6.51	1.71	6.76	0.00	12.19	191
Total units (log): 20% Rule	7.96	1.24	8.08	1.79	12.55	191
Total units (log): MBLR	7.93	1.30	8.17	1.95	12.78	191
Population (log)	10.63	1.26	10.8	4.33	15.19	191
Land area (2016, log)	17.19	1.09	17.17	14.20	20.92	191
HQTA (2016, log)	8.73	7.66	13.92	0.00	20.26	191
Jobs within 45 minutes auto travel time (log)	11.85	1.67	12.53	0.00	13.42	191
% Non-Hispanic white	36.25	24.35	32.36	1.15	89.99	191
% Black	4.73	5.81	2.6	0.00	41.81	191
% Asian	13.64	14.73	9.57	0.00	67.05	191
% Single-family detached homes	61.83	17.01	61.24	6.39	99.49	191
% Senior	15.07	8.61	13.42	5.47	82.45	191

Note. The minimum values for the following variables are zeros: moderate-income (MI) units, market-rate (MR) units, land area in HQTA in 2016, and the number of jobs within 45 minutes auto travel time. Because zero cannot be log transformed, the minimum values for the natural log of these variables are coded as zeros.

Sources: SCAG (2020); U.S. Census Bureau (n.d.-a); U.S. Census Bureau (n.d.-b); SCAG Open Data Portal (n.d.); U.S. Environmental Protection Agency (2014).

Appendix 4. Estimating Development Potential under General Plan Standards and Zoning Override

Table A4-1. Estimation Procedure for General Plan Standards

Procedure	Implementation/Example
Step 1: Identify targeted parcels for which development potential will be estimated.	Targeted parcels are those designated for or allowing multifamily development under a general plan or specific plans.
Step 2: Exclude parcels that are developed with multifamily residences and public infrastructure.	(a) Examples of excluded parcels include those developed with condominiums, townhouses, apartments, educational institutions, freeways and roads, and electrical power facilities. (b) Examples of non-excluded parcels include those developed with single-family residential, commercial, open space, and recreational use.
Step 3: Identify unprotected vacant parcels within the city in addition to those identified through steps 1 and 2.	E.g., 299 additional vacant parcels are identified for the City of Orange. These parcels do not include those indicated as "Undevelopable or Protected Land" in SCAG's data or located in Peters Canyon Regional Park.
Step 4: For the parcels identified through steps 1-3, estimate the size of the parcels that can potentially be (re)developed (SCAG, 2016).	E.g., among the parcels designated for MFR use under Fullerton's General Plan, 192 acres are currently developed with single-family homes and can potentially accommodate higher densities.
Step 5: Create low and high development scenarios.	The low development scenario assumes density at 15 units per acre. The high development scenario assumes density at 25 units per acre.
Step 6: Set bands of development probability.	Three bands of development probability are set: 10%, 20%, and 30%.
Step 7: Estimate development potential for the parcels identified through steps 1-3.	For a given development scenario (i.e., low or high): (a) For parcels developed with single-family homes, the development potential is calculated as: mean parcel size * number of parcels * (assumed density - 6); (b) For parcels developed with high-density single-family homes, the development potential is calculated as: mean parcel size * number of parcels * (assumed density - 9); and

	(c) For the rest of the identified parcels, the development potential is calculated as: mean parcel size * number of parcels. (d) The total development potential under general plan standards is the sum of the numbers from (a)-(c) multiplied by the development probability set at step 6.

Table A4-2. Estimation Procedure for Targeted Zoning Override

Procedure	Implementation/Example
Step 1: Identify targeted parcels for which development potential will be estimated.	Targeted parcels are those that are (1) located in transit- or jobs-rich areas, and (2) not zoned for multifamily residential (MFR) use. We define transit- or jobs-rich areas as parcels with at least 30% of the land being HQTA in 2016 or parcels located in census block groups with the number of jobs within 45 minutes auto travel time above 75th percentile of the county-wide distribution[a] in 2010, which is derived from the SLD.
Step 2: Exclude parcels that are developed with multifamily residences and public infrastructure.	(a) Examples of excluded parcels include those developed with condominiums, townhouses, apartments, educational institutions, freeways and roads, electrical power facilities, etc. (b) Examples of non-excluded parcels include those developed with single-family residential, commercial, open space and recreational use etc.
Step 3: For the parcels identified in steps 1 and 2, estimate the size of the parcels that can potentially be (re)developed (SCAG, 2016).	E.g., there are 6,156 parcels located in transit-rich areas in the City of Fullerton that are *not* zoned for MFR use and can potentially accommodate higher densities under a zoning override.
Step 4: Create low and high development scenarios.	The low development scenario assumes density at 15 units per acre. The high development scenario assumes density at 25 units per acre.
Step 5: Set bands of development probability.	Three bands of development probability are set: 10%, 20%, and 30%.
Step 6: Estimate development potential for the parcels identified through steps 1 and 2.	For a given development scenario (i.e., low or high): (a) For parcels developed with single-family homes, the development potential is calculated as: mean parcel size * number of parcels * (assumed density - 6); (b) For parcels developed with high-density single-family homes, the development potential is calculated as: mean parcel size * number of parcels * (assumed density - 9); and (c) For the rest of the identified parcels, the development potential is calculated as: mean parcel size * number of parcels.

	(d) The total development potential is the sum of the numbers from (a)-(c) multiplied by the development probability set at step 5.

Note. [a]We use a county-wide instead of regional distribution due to the large size and diversity of the SCAG region.

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