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Producing affordable housing in higher-opportunity neighborhoods: Incentives in California's LIHTC program

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ABSTRACT

Housing policy shapes where low-income families live and whether they can access neighborhoods that promote children's well-being. Since 2018, California's Low-Income Housing Tax Credit (LIHTC) program has incentivized the development of family affordable housing in higher-resource areas. We examine how the location of proposed and funded LIHTC developments changed in response to these incentives. We find that the probability that large family projects—those eligible for incentives—were proposed in higher-resource areas increased from 0.19 to 0.29, comparing 2014-2017 and 2018–2021. The probability that funded large family projects were located in higher-resource areas doubled, from 0.15 to 0.30. The probability of location in higher-resource areas declined for developments ineligible for incentives. Interviews with affordable housing developers illuminate the role of mission and resources in shaping their responses to program incentives. We conclude with a broader discussion of the LIHTC program as a tool for reducing neighborhood inequality.

Where children grow up affects their futures. Children who grow up in high-poverty, socially disadvantaged neighborhoods have lower academic achievement, complete fewer years of school, are more likely to become teen parents, and face other challenges to a successful transition to adulthood (Chetty et al., 2016; Sharkey & Faber, 2014; Wodtke et al., 2011, 2016). Concerns about the deleterious effects of neighborhood poverty concentration contributed to housing policy changes in the United States that provide low-income families with more residential choice and access to lower-poverty neighborhoods (Briggs et al., 2010; Khadduri, 2001). Housing voucher mobility programs have aimed to help low-income families move to lower-poverty neighborhoods, and they have had some success in increasing families' access to areas that provide greater economic, educational, and social opportunity, especially for children (Bergman et al., 2020; Chetty et al., 2016). However, access to lower-poverty, higher-opportunity neighborhoods—those presumed to positively impact children's development—for voucher users and for low-income households that do not receive subsidies is limited by the supply of affordable rental housing in these places.

Recent changes in states' administration of the Low-Income Housing Tax Credit (LIHTC) program have the potential to increase access to opportunity from the supply side. LIHTC, the U.S.'s primary affordable housing production program since its inception in 1986, provides tax credits to private developers to fund the acquisition, rehabilitation, and construction of housing units with long-term affordable rents. Nationally, only 20% of LIHTC units were in low-poverty neighborhoods (those with poverty rates below 10%) as of 2019, though the percentage is higher among newly constructed (as opposed to rehabilitated) developments and developments more recently placed in service (Fischer, 2018; Shelburne & Lawrence, 2022). State housing finance agencies (HFAs) have increasingly adopted selection criteria in their tax credit allocation processes to encourage LIHTC development in lower-

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poverty neighborhoods (Ellen et al., 2015). Whether these program incentives are sufficient to influence developers' locational choices and increase the production of affordable housing in higher-opportunity areas requires further investigation.

In this article, we examine California's 9% LIHTC program, which, since 2018, has added incentives to encourage development in areas that provide greater resources for residents, especially children. Examining all LIHTC projects, we find a slight shift in the location of proposed and funded projects away from the lowest-resource areas and toward higher-resource areas from 2014 to 2021. California's program incentives were only available to certain types of developments, so we then compare trends for projects eligible and ineligible for the incentives. We find that the probability that large family, new construction developments—those eligible for incentives—were located in higher-resource areas increased, while the probability that other types of developments were located in higher-resource areas declined. After the implementation of the incentives, 29% of applications proposing large family, new construction developments and 30% of such projects awarded tax credits were in higher-resource areas, compared to 19% of applications and 15% of awards in the pre-incentive period. The number of LIHTC-funded family housing units produced in higher-resource areas was 60% higher in the four years after the incentives were adopted compared to the four years prior. Interviews reveal how affordable housing developers' mission and resources influenced how they responded to the policy change, with many—but not all—planning to take advantage of the incentives and increase their production of family developments in higher-resource areas. Examining California's LIHTC program provides insights into one promising policy lever for increasing access to opportunity for low-income families with children. However, the program is not without its limitations and challenges in reducing neighborhood inequality, as we discuss in our concluding section.

The role of housing in neighborhood inequality

Neighborhood inequality is a persistent feature of U.S. metropolitan areas. High-income and low-income families and those of different racial/ethnic identities tend to live in separate—and unequal—neighborhoods (Jargowsky, 2015; Reardon et al., 2018). Segregation is particularly consequential for children: households with children are more segregated by race/ethnicity and income than childless households (Owens, 2016, 2017), and growing up in high-poverty neighborhoods hinders children's future educational, health, and social life outcomes (Chetty et al., 2016; Galster & Sharkey, 2017; Sharkey & Faber, 2014; Wodtke et al., 2011). Housing policy shapes neighborhood inequality and whether low-income children can access neighborhoods that can promote their positive development. The spatial distribution of housing by cost, size, and tenure (i.e., for-rent or for-sale) significantly impacts where households with different economic and social characteristics live (Bruch, 2014; Bruch & Mare, 2006; Clark & Dieleman, 2012; Owens, 2019; Tiebout, 1956). Exclusionary zoning laws that limit denser and more affordable housing development increase racial and economic segregation (Lens & Monkkonen, 2016; Pendall, 2000; Pendall & Carruthers, 2003; Rothwell & Massey, 2009, 2010; Watson, 2007).

Beyond zoning laws, assisted housing policies are also a significant cause of—and potential solution to—neighborhood inequality. Historically, the U.S. Department of Housing and Urban Development (HUD) perpetuated segregation by building public housing in predominantly low-income and racially minoritized communities (Briggs et al., 2010; Carter et al., 1998; Hirsch, 1983; Holloway et al., 1998; Massey & Kanaiaupuni, 1993; Schill & Wachter, 1995). Since the 1970s, federal housing programs have increasingly adopted goals around deconcentrating poverty and subsidizing housing in lower-poverty neighborhoods, motivated by evidence of the harmful impacts of concentrated poverty, rising costs of providing decent, safe, and affordable housing, and legal responsibility to not perpetuate segregation (Galster, 2013; Goering, 2005; Goetz, 2003; Khadduri, 2001; Khadduri & Wilkins, 2008).

Today, federally subsidized affordable housing is primarily provided via either housing vouchers or the LIHTC program, which each subsidize over two million households. Housing vouchers represent a people-based approach—providing rental subsidies that people can use in lower-poverty, higher-

opportunity neighborhoods than where public housing was traditionally located. In contrast, LIHTC is typically seen as a place-based approach for reducing neighborhood inequality, in two ways. First, high-quality affordable housing can spur community development in historically disinvested areas, and LIHTC developments stabilize or increase property values and safety in some distressed neighborhoods (see Dillman et al. [2017] for a review). Second, by operating through private market development, LIHTC may produce affordable housing in neighborhoods where subsidized housing previously did not exist, increasing access for low-income families. The locational distribution of LIHTC developments reflects this duality of goals. On one hand, nearly half of all LIHTC units were located in very socioeconomically distressed neighborhoods (those with high rates of poverty, unemployment, female-headed households, and public assistance receipt and low educational attainment) in 2016 (McClure, 2019). The average poverty rate in a LIHTC development's tract is higher than the average metropolitan area tract or average rental unit's tract (Freeman, 2004; McClure, 2006; McClure & Johnson, 2015). On the other hand, LIHTC units are more (and increasingly) likely to be in suburbs, perhaps because private development facilitated by the LIHTC program receives less political or community-based resistance than public housing (McClure, 2006; McClure & Johnson, 2015). Comparing the two predominant subsidized housing programs in the U.S., the share of LIHTC and voucher units in low-poverty neighborhoods (with poverty rates less than 10%) was about equal as of 2010 (though lower than the share for all rental units; McClure & Johnson, 2015), and LIHTC units are more likely to be proximate to high-performing schools than HCV units (Horn et al., 2014).

The debate over the locational goals of the LIHTC program—should the program aim to spur investment and provide much-needed affordable housing in distressed neighborhoods, or should the program leverage its ability to enter suburban and higher-income neighborhoods with scant affordable housing stock—was greatly impacted by the 2015 Supreme Court ruling in *Texas Department of Housing and Community Affairs (TDHCA) v. The Inclusive Communities Project, Inc. (ICP)*. The Court found that Texas's HFA was perpetuating segregation by prioritizing LIHTC development in high-poverty and majority-Black neighborhoods. Since this decision, LIHTC is increasingly being used to provide access to affordable housing in higher-opportunity areas, as we describe in the next section.

LIHTC regulations and development in high-opportunity areas

State HFAs allocate tax credits to developers through a competitive application process governed by both federal and state LIHTC regulations that influence, among other things, where affordable housing is built. For example, federal regulations, laid out in Internal Revenue Code (IRC) Section 42, provide a basis boost (which increases a project's cost basis, making them eligible for more tax credits) to projects in either Difficult Development Areas (DDAs)—census tracts where construction, land, and utility costs are relatively high—or Qualified Census Tracts (QCTs), economically disadvantaged census tracts. Developers respond to this promised basis boost—LIHTC production is higher in QCTs and DDAs compared to nearly identical tracts without these designations (Baum-Snow & Marion, 2009; Deng & Freeman, 2011; Eriksen, 2017; Lang, 2012). The IRC also requires that each state HFA address LIHTC location in their Qualified Allocation Plans (QAP), the regulations that guide selection procedures through which projects receive tax credits (U.S. Government Accountability Office, 2016). However, there is no guidance on how or whether locational criteria should be used to address segregation or inequality, though all programs are required to affirmatively further fair housing consistent with the Fair Housing Act (Grady & Boos, 2020).

After decades of debate over LIHTC's dual locational goals, states have increasingly incentivized LIHTC projects in higher-opportunity areas in their QAPs in recent years, accelerated by the *TDHCA v. ICP* ruling and new widely publicized evidence on neighborhood effects (Chetty & Hendren, 2018; Chetty et al., 2014; Ellen & Horn, 2018; Ellen et al., 2015; Johnson, 2014; Oppenheimer, 2015). By 2018, all but one state QAP included incentives for development in higher-opportunity areas, with considerable variation in approaches (Freddie Mac Multifamily & National Housing Trust, 2018), and the last state—North Dakota—adopted

such incentives in its 2020 QAP. State QAPs define "opportunity" in a variety of ways, commonly addressing domains like education, economic growth or jobs, income levels, access to health care, and transportation (Freddie Mac Multifamily & National Housing Trust, 2018). QAPs may identify specific high-opportunity areas, providing area lists or maps and prioritizing projects located in these areas (Ellen et al., 2015; Freddie Mac Multifamily & National Housing Trust, 2018). States can also incentivize projects in high-opportunity areas through application points for proximity to amenities that may be associated with opportunity, like schools, employment centers, and distance from environmental hazards (Ellen et al., 2015; Freddie Mac Multifamily & National Housing Trust, 2018; Shanholtz, 2016). Generally, QAP incentives operate either by making it more likely that a project in a higher-opportunity area will be selected for funding or by increasing the tax credits awarded for such projects through basis boosts. Following the 2008 Housing and Economic Recovery Act, state HFAs are permitted to allocate basis boosts to any project where additional subsidies are required to be financially feasible, not just in DDAs, which enables state HFAs to link basis boosts to opportunity incentives (Ellen et al., 2015).

QAPs can also create barriers to development in high-opportunity areas. Section 42 requires that leaders of municipalities where projects will be developed are informed and given sufficient opportunity for comment. In 2016, 12 state HFAs required local letters of support and an additional 10 did not require but awarded application points for letters of support (U.S. Government Accountability Office, 2016). This level of local control could disqualify projects proposed in high-opportunity areas if local resistance is high and essentially allow entire municipalities to "opt out" of LIHTC (Bookbinder et al., 2008). QAPs can also set cost thresholds that make development in high-cost areas impossible without special allowances (Spotts, 2016) or structure point allocation so that elements incompatible with building in high-opportunity areas are effectively mandatory to win tax credits.

Are incentives for development in higher-opportunity areas effective? They could operate through two channels: by changing where developers propose to build or by changing the projects the state HFA selects to receive tax credit awards. Few studies systematically analyze whether QAP incentives increased LIHTC development in high-opportunity areas, but those that do focus on projects that received awards. One study of 21 states found that a modestly higher share of credits was allocated to projects in lower-poverty and more racially diverse neighborhoods in states where QAPs promoted development in higher-opportunity areas from 2002–2010 (Ellen & Horn, 2018; Ellen et al., 2015). Access to education is a common opportunity metric, and an analysis of 37 states in 2013 found an association between QAP points awarded for access to schools and location of LIHTC projects near high-performing schools (Shanholtz, 2016). Analyses of Texas's response to the *TDHCA v. ICP* ruling also show that more projects were developed in lower-poverty and more racially diverse neighborhoods after such criteria were adopted in the QAP (Walter et al., 2018).

These analyses of the location of funded LIHTC developments are informative, but they did not determine whether developers changed where they propose to build, whether states changed which projects receive tax credits, or whether unrelated factors influenced LIHTC location. We move beyond state-level analyses of LIHTC development location to examine both applications and funded projects. Examining applications allows us to observe impacts of QAP changes on developer decision-making. On one hand, developers must "chase points" when choosing and designing LIHTC projects in order to win tax credits (Khadduri, 2013), so QAP regulations have real potential to shift siting and other practices. On the other hand, QAPs often have competing priorities, and there are typically multiple pathways to winning tax credits. We couple our quantitative analyses with interviews with developers to illuminate decision-making processes around whether or not to build in higher-resource areas. Analyzing both applications and tax credit awards allows us to observe whether any impact of QAP incentives on LIHTC development location is due to changes in developers' application behavior or the state's allocation behavior, or both.

Increasing LIHTC production in higher-resource areas in California

In this study, we focus on California, where QAPs have incentivized LIHTC development in higher-resource areas since 2017. The LIHTC program, while federally funded by the IRS, is state-administered and arguably comprises 51 distinct programs. Looking within one state is thus appropriate both for an in-depth analysis of its LIHTC program and to provide evidence for future cross-state comparisons. California has high housing and building costs, a decades-long housing supply shortage, and acute housing affordability and homelessness crises, which shape how the LIHTC program is designed and administered. The LIHTC program includes both 9% and 4% tax credits. 4% credits are awarded alongside additional subsidies like tax-exempt bonds and subsidize about 30% of low-income unit costs; 9% credits are not contingent on other subsidies and cover about 70% of costs. We examine the 9% program (the QAP incentives were not available in California's 4% program until 2021).

From 2002 to 2010, California's QAP both encouraged and discouraged development in high-opportunity areas (Ellen et al., 2015). First, the QAP removed application points previously awarded to developments in "balanced communities"—areas where affordable housing was proximate to high-income families' residences. Second, application points were added for proximity to transit, which may or may not correspond to neighborhood opportunity metrics. Third, the QAP removed QCT status as a favorable points tiebreaker, which could shift development away from high-poverty areas. From 2002 to 2010, the share of LIHTC-funded units in neighborhoods with poverty rates over 30% declined by 13% (Ellen et al., 2015).

Following the 2015 *TDHCA v. ICP* Supreme Court ruling, staff in California's Tax Credit Allocation Committee (TCAC, the HFA that administers the LIHTC program) and Department of Housing and Community Development (HCD) examined the locational patterns of the state's LIHTC developments and found that a disproportionate number were in high-poverty areas, according to our interviews with former TCAC officials. Staff began to discuss how the state's LIHTC program could affirmatively further fair housing and expand access to opportunity for children, influenced by social science research demonstrating the importance of neighborhoods for children's well-being. After considering several options, TCAC adopted changes to the QAP to promote development in high-opportunity areas. In 2017, a 10% basis boost was available to any 9% LIHTC development in a tract identified as having the highest opportunity level by the UC Davis Regional Opportunity Index for Places (ROI; see map at https://interact.regionalchange.ucdavis.edu/roi/webmap/webmap.html). (The basis boost was available only in cities of population at least 50,000 and counties where the 2-bedroom threshold basis limit was $300,000 or less). The ROI assessed California tracts on education, economy, housing, mobility, health/environment, and civic life indicators (UC Davis Center for Regional Change, 2016).

The ROI was not created for the purpose of housing development, so HCD and TCAC convened a fair housing task force to develop a statewide Opportunity Map that could be used for housing programs. The TCAC/HCD Opportunity Map (California Fair Housing Taskforce, 2017, 2018, 2020a, 2020b) provides tract-level opportunity index scores that combine region-standardized indicators across three domains—economics, education, and health/environment. (The mapping tool changed slightly over time. See methodology and maps at https://www.treasurer.ca.gov/ctcac/opportunity.asp.) Twenty percent of tracts in each region are designated as highest resource and 20% are designated as high resource, for a total of 40% of high or highest resource tracts in every region. Rural tracts are ranked in comparison to other rural tracts in the same county, rather than region. The map both ranks tracts by index scores and filters out high segregation and poverty tracts—those with poverty rates 30% or higher that are disproportionately non-White (compared to their county). The remaining uncategorized, non-filtered tracts are evenly divided into moderate resource and low resource categories based on their index scores. In 2020, a moderate resource, rapidly changing category was added to distinguish moderate resource tracts that had experienced rapid socioeconomic change since 2000.

In 2018, California's QAP added incentives for 9% LIHTC developments located in high or highest resource areas, the top two categories on the Opportunity Map. Like the 2017 regulations, a 10% basis boost was available to developments in high or highest resource areas (in counties with a two-bedroom basis limit of $400,000 or less). Applications for large family, new construction projects were also awarded eight amenity points if they were in a high or highest resource area. Large family projects are those in which at least 50% of low-income units are two-bedroom or larger (at least 25% must be three-bedroom or larger), and such developments with over 20 units must provide play or recreation facilities—these developments are intended for families with children. "New construction" distinguishes developments from acquisition/rehabilitation projects (which cannot be relocated; higher-resource areas may be less likely than lower-resource areas to have properties that can be repurposed for LIHTC). In total, applicants can claim no more than 15 site amenity points, and many projects outside high or highest resource areas obtain maximum points for proximity to other amenities (e.g., transit, public park, public library, grocery store, public school, medical clinic, pharmacy), so the points available for development in higher-resource areas are not determinative of funding.

Starting in 2019, large family, new construction 9% LIHTC projects in high or highest resource areas also received a tiebreaker point bonus. The tiebreaker point bonus is the most important incentive for developers, according to experts and developers we spoke with. Most applications receive the maximum number of points—for example, in one 2019 application round, only 11 of 73 applications did not obtain the maximum. The tiebreaker portion of the application is thus critical for winning tax credits (about half of applications received tax credits each year; see Tables A2 and A3). The 10% basis boost and eight site amenity points were also retained from the 2018 regulations.

Ultimately, developers must be responsive to the QAP to win tax credits and fund their projects. However, California's QAP includes incentives for multiple policy priorities. Tiebreaker points are also awarded to projects with leveraged soft funding from local municipalities, and given the emphasis in California on alleviating homelessness, many local funds are aimed at permanent supportive housing (PSH), rather than large family housing. The QAP also includes a complex system of set-asides, for example rural projects, Native American apportionments, and nonprofit developers, as well as specific regional and other allocations. While developers must "chase points" and respond to QAP regulations, it is not clear which points they will chase and whether the incentives for building in higher-resource areas are sufficient to markedly change the location of proposed LIHTC developments. The full impact of the opportunity incentives may also not yet be detectable. QAP changes are announced in advance (e.g., the 2019 tiebreaker point bonus was announced in fall 2017), but developers apply for LIHTC funding at the end of their pre-development phase, which includes site selection and often takes more than a year. Therefore, any changes we observe are likely a mix of developers purposely seeking out land in higher-resource areas and those prioritizing projects in their pipeline that happen to be in these areas. Next, we describe our approach to examining whether California's QAP changes shifted LIHTC developments to higher-opportunity neighborhoods.

Data and analyses

We assess changes in the location of 9% LIHTC applications and awards before and after California adopted QAP incentives for developments in higher-resource areas (for brevity, we refer to areas in the high resource or highest resource categories of the Opportunity Map as higher-resource). We define 2014–2017 as pre-incentive years and 2018–2021 as post-incentive years. While the basis boost was available in 2017, area resource categories were defined by a different methodology not intended for use in housing development, and the basis boost was available to all developments. Our analyses focus on large family housing developments, given the policy goal of increasing *children's* access to neighborhood opportunity, and we leverage differences in trends between projects eligible for incentives (large family, new construction developments) and those ineligible to assess their impact. Therefore, we consider 2018 as the first incentive year.

Our key variables come from several data sources on California 9% LIHTC applications, combinable by application ID. First, TCAC publishes spreadsheets online that list applications received, including data on construction type (e.g., new construction, acquisition/rehabilitation), number of units, and housing type (e.g., large family, special needs). TCAC publishes similar documents for projects that were allocated funding, which we use to identify tax credit awards.

Second, we downloaded individual project applications posted on TCAC's website. LIHTC applications are a rich data source on project features (see, e.g., Palm and Niemeier [2018] for an analysis of TCAC applications in their study of transit-oriented development and project costs). We applied regular expressions scraping techniques to extract information from each application as reported by the developer, including address, census tract, site amenity points claimed, tiebreaker points claimed, and use of basis boosts. Approximately 80 of 1,323 applications had missing or implausible census tract identification numbers (e.g., the wrong number of digits). In merging application data with resource category data from the Opportunity Map, we identified tract errors for an additional 50 applications. We corrected these by geocoding application addresses and joining their coordinates to 2010 tract shape files.

Third, data on tract resource categories are published online by the California Fair Housing Task Force. We merge the 2018–2021 opportunity categories from the TCAC/HCD Opportunity Map to applications based on census tract. In 2020 and 2021, rural tracts' resource categories were determined at the block group level. We geocoded addresses of applications in rural tracts and linked the coordinates to block group shape files to identify their block groups to merge on their opportunity categories. Because the Opportunity Map did not exist prior to 2018, we assigned applications submitted prior to 2018 to the 2018 resource categories based on their census tract.

We assembled data for the full population of LIHTC applications for 9% tax credits in California from 2014–2021 ($N = 1,169$; we excluded 88 applications in 2020 and 66 in 2021 for federal disaster credits intended for areas affected by wildfires and allocated via a separate process). We excluded eight applications in 2018–2021 located in areas with insufficient data per the Opportunity Map and one 2021 application that was missing location information for an analysis sample of 1,160 applications. We begin by describing the distribution of all applications and awards across resource categories in two time periods, the pre-incentive years of 2014 to 2017 ($N = 666$ applications) and the post-incentive years of 2018 to 2021 ($N = 494$ applications). Then, we predict the log odds that developments were proposed in higher-resource areas by (1) period and (2) incentives eligibility, leveraging the fact that only large family, new construction projects were eligible for application incentives, using a logistic regression model:

$$log\left(\frac{p}{1-p}\right) = \alpha + \beta_1 Period + \beta_2 Eligible + \beta_3 Period \ x \ Eligible, \qquad (1)$$

where p is the probability that the project was in a higher-resource area. β_1 estimates whether the log odds of location in a higher-resource area changes from the pre- to post-incentive period. Because we interact incentive period with incentives eligibility, β_1 indexes change over time only for developments ineligible for incentives—those that are not large family, new construction projects. β_2 estimates the difference in the log odds of location in a higher-resource area between incentives-eligible and ineligible projects; because we include the interaction term, this estimate is for pre-incentive years. β_3, the coefficient on the interaction term between period and incentives eligibility, assesses whether the change over time in log odds of location in a higher-resource area differs for incentives-eligible versus ineligible projects. If the incentives were effective, we would expect a positive β_3 coefficient. We subsequently add control variables associated with project location (according to our developer interviews) to the model: year fixed effects, region fixed effects, number of units in the development, amount of federal tax credits requested, and location in a DDA or QCT. We use region rather than city to account for geographic differences because many cities are the site of applications in only one time period (see Table A7).

We complement our quantitative analyses with data from interviews with 24 affordable housing developers who worked at firms that submitted an application to California's 9% LIHTC program from 2014–2021. Our sample included 17 nonprofits (ranging from small community-based organizations to large national organizations), three for-profit firms, and three housing authorities with development divisions or affiliated nonprofits (two developers worked for the same nonprofit firm). On average, firms in our interview sample submitted 20 applications from 2014–2021, ranging from three to 77. The sample is diverse with respect to predominant region of development in California. About half of firms submitted applications for projects in higher-resource areas after 2018. Table A1 provides more information about the interview sample. One author (Owens) recruited participants via e-mail and conducted interviews over Zoom between January and September 2022. On average, the interviews lasted one hour, and participants were offered a gift card for their time. Topics included background information on the developer and their firm's mission and scope; how the development process gets started; key development steps like site selection and financing; barriers to development; and the Opportunity Map incentives. Interviews were recorded, audio transcribed, and topic coded. For this article, we analyzed interview data about site selection and the opportunity incentives.

Results

Distribution of LIHTC applications and awards across resource categories

Figure 1 presents the distribution of 9% LIHTC applications across the five resource categories defined by the Opportunity Map (we recoded the single application in the moderate, rapidly changing category in 2020 to moderate). The top bar presents the distribution before the introduction of resource area incentives (2014–2017; $N = 666$ applications); the bottom bar presents the distribution in post-incentive years (2018–2021; $N = 494$ applications). Applications submitted in 2018–2021 are assigned to their year-specific resource categories; applications submitted prior to 2018 are assigned to 2018 categories. Comparing pre- and post-incentive years, applications shifted away from high segregation and poverty areas and toward other types of areas, especially low resource areas. Preliminary exploration of this striking increase in low resource areas shows a smaller increase for large family projects, so perhaps other types of developments prioritized in the QAP, like PSH, were predominantly in low resource areas. The proportion of applications in higher-resource areas increased slightly from pre- to post-incentive years (from 22 to 24%), though the increase is not annually monotonic.
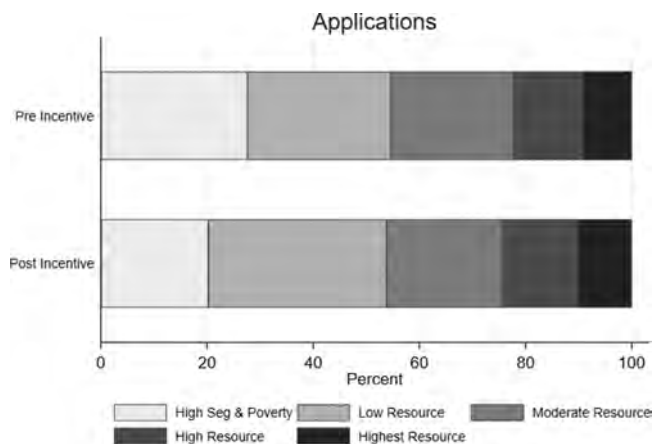
Figure 1. Distribution of 9% LIHTC applications across resource categories, pre- and post-incentive. "Seg" means "Segregation." The moderate resource category includes those categorized as moderate, rapidly changing in 2020. Pre-incentive years are 2014–2017; post-incentive years are 2018–2021. There were 666 applications in the pre-incentive period and 494 in the post-incentive period.
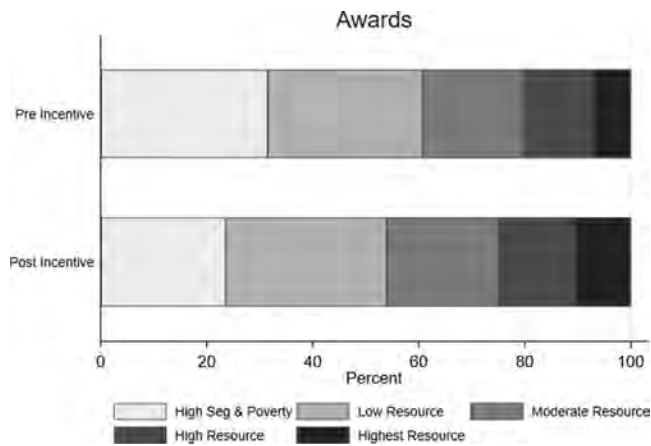
Figure 2. Distribution of 9% LIHTC awards across resource categories, pre- and post-incentive. "Seg" means "Segregation." The moderate resource category includes those categorized as moderate, rapidly changing in 2020. Pre-incentive years are 2014–2017; post-incentive years are 2018–2021. There were 311 awards in the pre-incentive period and 237 in the post-incentive period.

Table A2 presents the annual distributions of both projects and units over the five resource categories. We do not observe stark differences between the distribution of project applications and units in most years, suggesting that project size is not systematically associated with resource area category. One exception is 2021, in which 22% of applications but only 16% of proposed units are in higher-resource areas. This difference in proportions indicates that smaller developments were proposed in higher-resource areas, perhaps due to anticipated opposition to larger projects, higher costs, or smaller available land parcels, all factors mentioned by interviewees. One other notable trend is that the number of total applications declined over this period, from an annual average of 167 in the pre-incentive period to 124 in the post-incentive period. The average building cost per LIHTC unit increased significantly during this period, potentially deterring developers or delaying assembly of project financing (Reid, 2020).

Application data provide information on developers' decisions on where and what to build, while data on tax credit awards reveal the state's priorities in selecting projects to fund. Figure 2 presents the distribution of applications selected to receive tax credit awards across resource categories. Like for applications, there is a shift in tax credit awards away from high segregation and poverty areas to other resource categories. In the post-incentive years ($N = 237$ total awards), 25% of awards were for projects in higher-resource areas, compared to 20% in 2014–2017 ($N = 311$ total awards). The increase in the share of awards in higher-resource areas was larger than the increase for applications, indicating that state selection procedures contributed to new LIHTC development in these areas over and above developers changing their site selection procedures, a point we return to in Table 3. Table A3 presents the annual distribution across resource categories for awarded projects and units. Proportionally fewer units than projects are in higher-resource areas in many years, suggesting funded projects in these areas are often smaller in scale. Like for applications, the number of awards declined in the post-award period. The award rate was, on average, 47–48% in both periods.

Evaluating QAP incentives for LIHTC development in higher-resource areas

These results demonstrate a shift for all 9% LIHTC projects away from high segregation and poverty areas and an increase in applications and awards in higher-resource areas. But the increase is modest— about 2% points for applications and 5% points for awards. To more accurately assess whether and how much LIHTC development responded to the QAP changes, we compare the probability of applications' and awards' location in higher-resource areas (1) before and after the incentives were

introduced and (2) by projects' eligibility for application incentives (new construction, large family projects versus all other development types). If the QAP changes effectively incentivized developers' project site selection or changed state's selection procedures, we expect a larger increase in the probability of large family, new construction projects' location in higher-resource areas, compared to other project types.

Table 1 presents predicted probabilities from logistic regression models predicting applications' location in higher-resource areas by incentives eligibility and period (Table A4 [left panel] presents odds ratios from the logistic regressions as well as results weighted by the number of units, which are substantively similar). First differences show the change in probability pre- and post-incentive by projects' eligibility for QAP incentives, and second differences show the difference in trends.
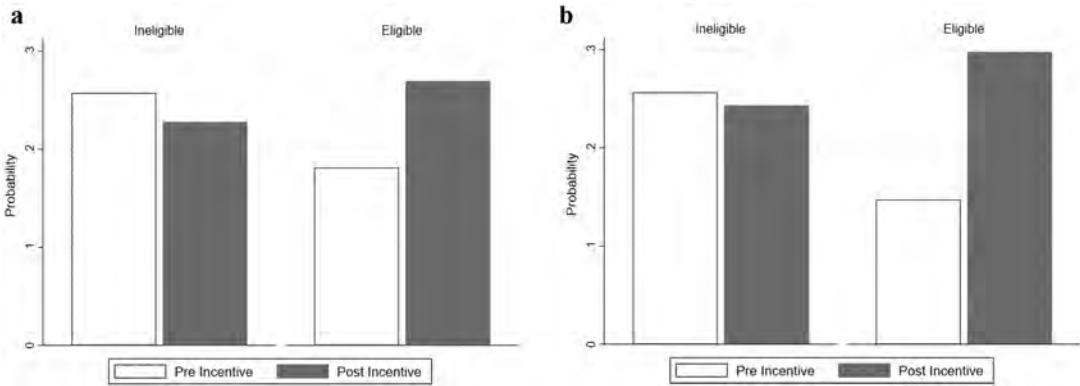
In the post-QAP incentives period, the probability that applications for large family, new construction projects were located in higher-resource areas increased from 0.19 to 0.29 (top panel, column 1). In contrast, the probability that incentives-*ineligible* applications were located in higher-resource areas declined, from 0.25 to 0.22. The difference in trends between eligible and ineligible applications was 0.12, which is statistically significant. (While some differences are non-significant, our sample includes the entire population of California LIHTC applications during this time, so these coefficients reflect full trends over time and eligibility). The bottom panel of Table 1 presents predicted probabilities from models that control for year, region, project size, federal tax credits requested, and location in a DDA or QCT. Results are substantively similar to the model without controls and are depicted in Figure 3a. The probability that a proposed incentives-ineligible project was located in a higher-resource area *declined* by 0.03 after incentives were adopted, while the probability for incentives-eligible projects increased by 0.09, again a difference in trends of about 0.12. To illustrate the impact in one region, Figure A1 maps incentives-eligible developments in the Bay Area pre- and post-incentive period. While the number of incentives-eligible applications is small in each period, there is an increase in the share of applications in higher-resource areas.

Results are similar for projects that received tax credit awards (Table 2 presents predicted probabilities; see Table A4 [right panel] for odds ratios). The probability that incentives-ineligible

Table 1. Predicted probabilities of location in high or highest resource areas for 9% LIHTC applications, by QAP incentives eligibility and incentive period.

	Pr(High/Highest Resource Area)	First Differences	Second Differences
		No Controls	
Ineligible, Pre-Incentive	.245		
	(.022)	.217–.245 =	
Ineligible, Post-Incentive	.217	−.028	
	(.024)	(.033)	.094 − (−.028) =
Eligible, Pre-Incentive	.193		.122*
	(.023)	.287–.193 =	(.051)
Eligible, Post-Incentive	.287	.094*	
	(.032)	(.040)	
		With Controls	
Ineligible, Pre-Incentive	.257		
	(.023)	.228–.257 =	
Ineligible, Post-Incentive	.228	−.030	
	(.025)	(.033)	.088 - (−.030) =
Eligible, Pre-Incentive	.181		.118*
	(.022)	.270–.181	(.050)
Eligible, Post-Incentive	.270	.088*	
	(.032)	(.038)	

Cells present predicted probabilities of location in high or highest resource area from logistic regression models (Table A4 presents odds ratios). In the lower panel, controls include year and region fixed effects, number of units, annual federal tax credit amount requested, and location in a Difficult Development Area or Qualified Census Tract. Pre-incentive years are 2014–2017; post-incentive years are 2018–2021. Eligible developments are large family, new construction; all other developments are ineligible. Standard errors of predictions are in parentheses. Two-tailed significance tests; *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

Figure 3. (a) Predicted probabilities of 9% LIHTC applications' location in high or highest resource areas. (b) Predicted probabilities of 9% LIHTC awards' location in high or highest resource areas. The figure presents predicted probabilities from Table 1 (Figure 3a) and Table 2 (Figure 3b), project-level models with control variables (lower panels). Pre-incentive years are 2014–2017; post-incentive years are 2018–2021. Eligible developments are large family, new construction; all other developments are ineligible.

Table 2. Predicted probabilities of location in high or highest resource areas for 9% LIHTC applications that received tax credit awards, by QAP incentives eligibility and incentive period.

	Pr(High/Highest Resource Area)	First Differences	Second Differences
	No controls		
Ineligible, Pre-Incentive	.242 (.032)	.224–.242 = −.018 (.047)	
Ineligible, Post-Incentive	.224 (.035)		.151 − (−.018) = .169* (.074)
Eligible, Pre-Incentive	.147 (.031)	.298–.147 = .151** (.057)	
Eligible, Post-Incentive	.298 (.047)		
	With Controls		
Ineligible, Pre-Incentive	.256 (.033)	.243–.256 = −.013 (.049)	
Ineligible, Post-Incentive	.243 (.038)		.150 − (−.013) = .163* (.076)
Eligible, Pre-Incentive	.147 (.032)	.297–.147 = .150** (.057)	
Eligible, Post-Incentive	.297 (.049)		

Cells present predicted probabilities of location in high or highest resource area from logistic regression models (Table A4 presents odds ratios). In the lower panel, controls include year and region fixed effects, number of units, annual federal tax credit amount requested, and location in a Difficult Development Area or Qualified Census Tract. Pre-incentive years are 2014–2017; post-incentive years are 2018–2021. Eligible developments are large family, new construction; all other developments are ineligible. Standard errors of predictions are in parentheses. Two-tailed significance tests; *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

developments were located in higher-resource areas changed little pre- to post-incentive period, from 0.24 to 0.22 (column 1). The probability that incentives-*eligible* developments that received awards were located in higher-resource areas doubled from 0.15 to 0.30. The lower panel of Table 2 and Figure 3b presents predicted probabilities from models controlling for year, region, project size, federal tax credits requested, and location in a DDA or QCT. Like in the models without controls, the probability of location in a higher-resource area changed little for incentives-ineligible projects while increasing by about 0.15 for incentives-eligible projects after 2017—a difference in the trends (second difference) of 0.16 between incentive-eligible and -ineligible projects. The total number of funded large family, new construction units in higher-resource

areas increased by 60%, from 889 to 1,431, comparing the four years before and after the incentives were adopted.

The probability of location in higher-resource areas increased more for awards than for applications following the adoption of QAP incentives, suggesting that while developers shifted proposals toward higher-resource areas, state selection procedures disproportionately funded these applications. We directly test whether the probability of winning tax credits increased more for incentives-eligible projects in higher-resource areas than for all other projects using a logistic regression model that interacts application type and incentives period. Here, application type is either (1) applications for incentives-eligible projects located in a higher-resource area or (2) all other applications (incentives-ineligible projects and incentives-eligible projects not located in a higher-resource area). Table 3 presents predicted probabilities (Table A6 presents odds ratios). The largest change in award probability pre- to post-incentive is for incentives-eligible developments located in higher-resource areas. Prior to 2018, their probability of receiving tax credits was 0.33; this increases to 0.5 in the post-incentive period (first difference of 0.167), compared to negligible changes in probability of award for all other projects. Table 3 thus confirms that state selection procedures contributed to the increase in LIHTC development in higher-resource areas above and beyond the shift in the application pool.

In addition to changing the location of proposed projects, the incentives could also change the type of project proposed by developers, from ineligible to eligible projects, but this does not appear to be the case. As Table A5 shows, the total number and share of applications for large family, new construction projects *declined* after 2017, from about 44% of 666 applications pre-incentive to 39% of 494 applications post-incentive. The share of applications for special needs housing increased over time, due to the increasing focus on housing formerly unhoused individuals in California. Therefore, in the absence of the incentives, developing large family projects may have become even less likely (Nguyen et al., 2013). A third way developer behavior could change in response to the incentives would be to move from rehabilitation to new construction of large family projects; Table A5 indicates the share of large family, rehabilitation projects is fairly stable over time.

We replicated Figure 3a,b defining the post-incentive period as 2019–2021 (rather than 2018–2021), when tiebreaker points were available for eligible developments in higher-resource areas. The tiebreaker bonus is the most attractive incentive for developers—analyses of application data show that more incentives-eligible applications claimed the tiebreaker points than the amenity points. In interviews, developers described "fighting over the tiebreaker," as one for-profit developer put it, and mention amenities points less frequently—those can be maximized through proximity to grocery stores, libraries, and other amenities. Further, this later period may more plausibly reflect a change in developers' site selection, rather than developers taking advantage of incentives for projects already in development. Several developers noted that 2018 or 2019 applications for projects in higher-resource areas were already

Table 3. Predicted probabilities of receiving tax credit awards by QAP incentives eligibility and location in high or highest resource area, by incentive period.

	Pr (Award)	First Differences	Second Differences
Eligible + High/Highest, Pre-Incentive	.333 (.062)		
Eligible + High/Highest, Post-Incentive	.500 (.067)	.500–.333 = .167^ (.091)	
All Other Applications, Pre-Incentive	.479 (.020)		−.002–.167 = .169^ (.097)
All Other Applications, Post-Incentive	.477 (.024)	.477–.479 = −.002 (.031)	

Cells present predicted probabilities from logistic regression models predicting award receipt from interaction terms between application type and incentives period. (Table A6 presents odds ratios). Application type is either (1) incentives-eligible project type and located in a high or highest resource area or (2) all other applications (incentives-ineligible and incentives-eligible but not located in a high or highest resource area). Pre-incentive years are 2014–2017; post-incentive years are 2018–2021. Standard errors of predictions are in parentheses. Two-tailed significance tests; ^$p \leq .10$ *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

in the pipeline, and only later were they truly shifting their pre-development process to align with QAP incentives. Figures A2a,b presents these results. Trends look similar to Figure 3a,b. From models with the same controls as in Tables 1 and 2, the predicted probability of large family, new construction applications' location in higher-resource areas increased from 0.18 to 0.27, while the predicted probability of tax credit awards in higher-resource areas increased from 0.15 to 0.29.

Examining developers' decision-making processes

Analyzing differences in trends between projects eligible and ineligible for incentives, we conclude that QAP incentives increased LIHTC development in higher-resources areas. That said, most applications and funded projects are still not in higher-resource areas in the post-incentive period. While developers are responsive, the incentives are not determinative. Evidence from interviews with developers illuminates why some developers responded to the policy change and some did not. Every developer interviewed was well versed in the Opportunity Map and the QAP regulations. In order to win funding, "you wait until these rules come out and then you locate a property that would allow you to score competitively," as one developer said, so they stay on top of proposed changes, and many are active in advocacy and professional organizations. It is not by chance that development is moving to higher-resource areas (developers framed their response to the incentives in terms of location, rather than changing tenant or project type for incentives eligibility). Interview data suggest that the degree to which developers responded to the QAP incentives depended on two key factors: mission and financial resources.

Of the 24 developers interviewed, two did not anticipate pursuing projects in higher-resource areas because it was not consistent with their mission—who they build for and where they build. Both developers were nonprofit and focused on specific areas. One Bay Area nonprofit firm primarily built PSH for formally unhoused individuals, projects ineligible for the incentive in the 9% LIHTC program. (PSH became eligible for incentives in the 4% program in 2021, as we discuss later, but even so, this developer did not anticipate developing in high-resource areas with "terrible buses ... no bike lines, they all drive their Tesla around, right?" that would not be a good match for their tenants, who require public transit and walkability.) A second developer described their firm, focused on rural areas, as "one of the consistent opponents to opportunity maps ... because the data is flawed and insufficient. ... A lot of our rural communities have insufficient data, so we don't even show up on the map to begin with, and many communities have zero-opportunity [tracts]." While 40% of rural block groups in all counties are classified as higher-resource, in some counties, the higher-resource areas cluster in one area.

Twelve developers saw the opportunity incentives as "one thing among many, really," as a Southern California nonprofit developer said. Developers identified three main pathways to funding: building in a high-resource area, building PSH, and/or building in a jurisdiction with local funding. Developers described considering a land parcel's Opportunity Map category when evaluating it, but it was only one factor that they considered when determining a project's feasibility. One large statewide nonprofit developer said, "We certainly aren't just seeking out high resource areas ... It's like a plus, but it's certainly not a necessary thing." A housing authority director echoed, "I think we're gonna take advantage of it when we can ... that was just a nice bonus that got us a little extra. I think it gave us a bump on our tax credit allocation, so that helped just close the gap on the financing."

These developers expressed concern that the emphasis on developing in higher-resource areas was taking affordable housing from historically disadvantaged neighborhoods—echoing the people-based v. place-based debate in housing policy. One nonprofit developer voiced a common sentiment: "Affordable housing should be everywhere ... there's concern that [opportunity incentives] will mean disinvestment from other communities or de-prioritization of other communities that need affordable housing to maybe stabilize the people who want to stay there." Many developers felt that the high-quality affordable housing they build spurred development and created opportunity (several used the word *catalyst*), and they did not plan to pivot entirely to higher-resource areas. They worried that

the QAP incentives impeded their community development mission—LIHTC's place-based orientation to alleviating neighborhood inequality.

Ten developers described opportunity incentives as a determining factor in where they chose to site projects: "the first question we ask: is that a high resource area? Okay, then we know we can be competitive." Developers reported, "selecting deals because they're in high-resource areas"; "all of the stuff we were looking at for our pipeline definitely did change" to focus on high-resource areas; "our new strategy is to be in these areas"; and "We pivoted immediately to only make offers on properties that are located in highest-resource areas." These developers had more financial resources, which correlated with firm size and nonprofit v. for-profit status. All three for-profit developers are among the developers for whom opportunity incentives are a determining factor and all brought up the incentives for developing in high-resource areas in response to questions about how the development process gets started—before being explicitly asked about it. For-profit and larger nonprofit firms have the capital to purchase land and were more likely than smaller nonprofit firms to work with acquisitions teams and land brokers to purchase and hold land while they assembled the rest of their financing. Smaller nonprofits and those embedded in particular communities more often obtained publicly owned or donated land, which may not be in higher-resource areas. Land is often more expensive in higher-resource areas than lower-resource areas—one large nonprofit firm reported starting a land fund several years ago specifically to be able to afford parcels in higher-resource areas. In fact, several developers noted that parcels in higher-resource areas are priced higher by brokers who know that the opportunity incentives increase demand for these areas.

In sum, both applications and tax credit awards for large family, new construction developments shifted to higher-resource areas after the introduction of the QAP incentives. Most developers responded or planned to respond to the incentives to increase their odds of winning tax credit funding, but most projects continued to be located outside of higher-resource areas, winning funding through other state priorities. While these QAP incentives address one policy goal of increasing access to opportunity, balancing this with goals around community development and, at its core, providing decent, safe, and affordable housing presents the LIHTC program with challenges that we discuss below.

Discussion

Housing policies can play a powerful role in providing low-income children with access to high-opportunity neighborhoods (Bergman et al., 2020; Chetty et al., 2016). The LIHTC program takes two approaches, aiming to reduce neighborhood inequality through community development and investment in distressed areas while also producing affordable housing in areas that previously lacked it. Spurred by a resurgence of highly publicized research on neighborhood effects and recent court decisions, states have adopted policies to increase LIHTC production in lower-poverty, higher-resource neighborhoods. In 2018, California's LIHTC program adopted QAP regulations aimed at incentivizing the construction of large family developments in higher-resource areas that may provide opportunities for children. From 2014 to 2021, the location of 9% LIHTC applications and awards shifted slightly away from areas with high levels of racial segregation and poverty and toward higher-resource areas. When we examine the difference in trends between developments eligible and ineligible for the incentives, our analyses provide strong evidence that QAP incentives increased the production of affordable housing in higher-resource areas. The probability that applications for large family, new construction developments were located in higher-resource areas increased by nearly 50% and, for projects that received tax credit awards, the probability of location in higher-resource areas doubled after the introduction of the incentives. In contrast, the probability of incentives-ineligible projects' location in higher-resource areas declined slightly. By 2021, 29% of applications and 33% of awards for large family, new construction projects were in higher-resource areas, compared to less than 20% of applications or awards for other types of developments.

Interview data show that developers evaluate QAP incentives according to their missions and resources. The interviews also reveal remaining barriers to development in higher-resource areas—QAP incentives cannot address land use policy and funding limitations. Higher-resource areas may have restrictive zoning that prevents multifamily development, and residents of such areas may be particularly likely to oppose such development even if it is permitted (Einstein et al., 2019). Few developers want to undertake a rezoning process because it adds time and money to an already lengthy and expensive process. As one nonprofit developer said, "Single family neighborhoods . . . we're not even going there because it's not zoned. It's never going to be zoned. It's not going to happen." Developers also emphasize the importance of local government support, both for ease of the development process and because obtaining local resources, including land, is rewarded by funding programs. Table A7 shows variation in the number of applications across municipalities—and 40% of all municipalities in California did not have any LIHTC applications during this time (and are excluded from the table). To better understand the potential of the QAP incentives, future research should compare the Opportunity Map to zoning data and data on available public land.

The potential of QAP incentives to reduce neighborhood inequality is also bounded by how many units the LIHTC program funds. Subsidized housing comprises a small share—less than 5%—of total housing stock in the U.S, and only about 25% of low-income families receive housing subsidies (Center on Budget and Policy Priorities, 2017; Owens, 2015). Therefore, any change in the location of subsidized housing will have a modest impact on broader segregation patterns (Owens, 2015). Comparing the four-year period before and after California's QAP incentives, the number of large family, new construction units funded in higher-resource areas increased by nearly 600 units, from 889 to 1,431 (even as the total number of funded large family units declined). While this represents an increase of over 60%, only an additional 600 low-income families gained access to these areas while over half a million families with children in California have incomes below the poverty line (a crude measure of housing need).

Still, LIHTC comprises a significant share of all multifamily housing produced in the U.S.—nationally, about 40% of multifamily starts in 2020 and more than 1/3 of all multifamily rental construction between 1987 and 2006 were LIHTC-funded (Khadduri et al., 2012; Novogradac, 2022). Therefore, LIHTC is an important housing policy tool, so policymakers must ensure its effectiveness. One challenge is that LIHTC is tasked with multiple, at times conflicting, goals. One important area for further research is whether cost per unit in higher-resource areas is greater than in other areas, which would reduce the total number of units the program can support, absent an increase in the total tax credits available. Studies of development in DDAs have noted this tradeoff between development in higher-cost areas and total development of decent, safe, and affordable housing, arguably the main goal of subsidized housing programs (Eriksen, 2017). Moreover, cost containment is a TCAC priority and allocation criteria, and goals of limiting cost per unit may be in conflict with QAP incentives to build in higher-resource—often higher-cost—areas. Preliminary analyses indicate that tax credit allocations per unit are about 10% higher for projects in higher-resource areas (and higher for incentives-eligible than ineligible projects). State HFAs or federal policymakers interested in adopting similar QAP incentives must consider how to mitigate these tradeoffs.

Our findings provide evidence that the QAP incentives were effective in their goal, but evaluating the potential of the LIHTC program to reduce neighborhood inequality requires a broader perspective. First, new LIHTC units in higher-resource areas may be occupied by low-income families who already live in those neighborhoods. This would not achieve the goal of inducing geographic mobility or facilitating access to opportunity for families who do not already live in these places, though providing stable, high-quality affordable housing could improve these children's lives in many ways (Leventhal & Newman, 2010). Research on LIHTC tenants is limited by sparse data, but surveys of tenants in 18 California LIHTC properties suggests that more than half lived in the same zip code prior to moving into their unit (Reid, 2019). Further research is needed on tenants moving to developments in higher-resource areas to evaluate QAP incentives as a tool for increasing residential mobility to higher-opportunity areas.

Second, if QAP incentives effectively shift development to higher-resource areas, accurately measuring neighborhood resources or opportunity in these policies is crucial. This is a complex and challenging task—QAPs often define opportunity based on a single dimension or by equating opportunity with population characteristics rather than structural features that provide economic or educational opportunities (Goetz, 2017). For example, the provisions in Texas's QAP are based primarily on population socioeconomic composition, so while LIHTC development in so-defined "high-opportunity" areas increased after the incentives were introduced, these areas are not markedly different than traditional LIHTC locations in their transit accessibility or environmental health, other indicators of opportunity (Walter et al., 2018). The TCAC/HCD Opportunity Map was created to identify areas "whose characteristics have been shown by research to support positive economic, educational, and health outcomes for low-income families—particularly long-term outcomes for children" (California Fair Housing Taskforce, 2020b, p. 1). While the map incorporates a range of characteristics, including both compositional and structural features of place (e.g., school quality), a recent analysis shows weak correspondence among the Opportunity Map's metrics and other data sources measuring neighborhood opportunity (Brazil et al., 2023). Moreover, quantitative metrics of opportunity may not correspond with residents' assessments of place—survey data shows that California LIHTC tenants' perceptions of neighborhood quality also correspond weakly with the Opportunity Map (Reid, 2019). Researchers must continue to identify the multidimensional features of neighborhoods that matter for families' and children's well-being, unpacking the "black box" of neighborhood effects. Efforts that identify advantageous structural features of places rather than equating opportunity with racial/ethnic or socioeconomic composition are likely to be more successful in identifying places that can promote children's well-being. Communication and translation between research and policy must be strengthened so that findings and data are accessible to support efforts like the Opportunity Map.

Finally, QAP incentives introduce tradeoffs in the type and location of LIHTC units proposed. The increase in large family, new construction projects in higher-resource areas means that fewer such units are built in lower-resource and rapidly gentrifying areas. Developers expressed concern over this tension—as one said, "There has to be the both/and—the place-based investment and the mobility, and they have to kind of be working together . . . . I'm a little nervous about the criteria being limiting and not allowing for the investment that should happen in neighborhoods where more people could be helped." Of course, less than one-third of large family projects were proposed or funded in higher-resource areas after the adoption of the QAP incentives—most projects are still in lower-resource areas. Moreover, developers continue to build other types of projects—multiple funding sources increased support for PSH, and senior developments continue to be funded (Table A5). But developers, especially those embedded in lower-resource communities, expressed their desire for a cap on the share of projects funded in higher-resource areas. The 4% LIHTC program was historically not competitive in California, but rising costs, rising need, and new pools of funding led to oversubscription for available credits since 2020. The 4% program adopted the higher-resource area incentives in 2021—for all projects, not just large family projects. Many developers and the former state policymakers we interviewed opposed the use of incentives for all projects, given that the motivation for increasing access to opportunity is about families with children, not, e.g., formerly unhoused adults. The 4% program has added a soft cap on incentives for higher-resource areas once 50% of financing is awarded; the cap has not been met in the 2 years the opportunity incentives have been in effect, though the share of projects in higher-resource areas has risen. Policymakers should consider whether and what caps or targets should be adopted across programs to ensure equity across tenant and neighborhood types as the LIHTC program strives to meet its multiple and, at times, competing priorities.

The complexity of the LIHTC program emphasizes how much it is asked to do—in addition to providing affordable housing, LIHTC is increasingly tasked with addressing larger social ills like residential inequality, providing social services and health care to formerly unhoused tenants, meeting higher environmental building standards than market-rate developments, and spurring community investment. While not a silver bullet, QAP incentives are one tool that state HFAs can use to

potentially promote residential mobility and reduce inequality in children's neighborhoods, so understanding how these policies operate in state and local context is key for maximizing their potential impact. We provide evidence from California, and we look forward to future research that compares how states define opportunity, which development types they target, and how QAP incentives interact with other LIHTC priorities, zoning, and other local policies. Building cross-state models will be important to identify best practices for increasing access to opportunity in the LIHTC program.

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Appendix A

Table A1. Developer (*N* = 24) and firm (*N* = 23) characteristics.

Characteristic		N
Respondent Position	Principal (e.g., CEO, President, Executive Director, Founder)	7
	Real Estate, Development, or Housing Principal (e.g., Director, VP) or Analyst	17
Respondent Gender	Female	11
	Male	13
Respondent Race/Ethnicity	White	18
	Latinx	4
	Undetermined	2
Firm Type	For-Profit	3
	Nonprofit	17
	Housing Authority	3
Firm Predominant Region of Development	Capital & Northern	5
	Central Valley & Central Coast	5
	City of LA, LA County, Orange County	5
	East Bay, South and West Bay, San Francisco County	4
	Inland Empire & San Diego County	4
Total N 9% LIHTC Applications, 2014–21	Mean	20
	Min	3
	Max	77
Firm Submitted 9% Application in High/Highest Resource Tract, 2018–2021	Yes	11
	No	12

Respondent gender and race/ethnicity is based on interviewer assessment, respondent disclosure, or public membership in identity-based affinity group (e.g., listed on LinkedIn). Number of applications reflects those for which the firm was the primary applicant. Regions are defined by California's Department of Housing and Community Development.

Table A2. Distribution of 9% LIHTC applications across resource categories, 2014–2021.

Year	Level	High Seg & Poverty	Low Resource	Moderate Resource	High Resource	Highest Resource	High + Highest	N
2014	Project	27.75	26.59	27.17	10.40	8.09	18.49	173
	Units	24.97	29.61	26.78	11.49	7.16	18.65	10,102
2015	Project	30.95	23.21	20.83	15.48	9.52	25.00	168
	Units	31.52	25.11	19.49	15.88	8.00	23.88	8,886
2016	Project	26.42	28.30	23.90	11.32	10.06	21.38	159
	Units	28.16	28.86	23.64	10.85	8.49	19.34	8,565
2017	Project	25.30	30.12	20.48	14.46	9.64	24.10	166
	Units	25.40	28.83	19.26	16.66	9.84	26.50	9,967
2018	Project	21.48	30.37	20.74	17.04	10.37	27.41	135
	Units	23.27	30.61	19.95	17.04	9.14	26.18	8,041
2019	Project	14.50	35.88	23.66	13.74	12.21	25.95	131
	Units	14.42	36.19	24.01	13.58	11.81	25.39	7,130
2020	Project	23.01	32.74	23.01	11.50	9.73	21.23	113
	Units	21.96	32.24	22.03	13.91	9.86	23.77	6,585
2021	Project	22.61	35.65	20.00	13.91	7.83	21.74	115
	Units	24.80	38.69	20.49	11.01	5.00	16.01	8,354

In 2020, one project was classified as Moderate (Rapidly Changing); we combine this category with "Moderate Resource."

Table A3. Distribution of 9% LIHTC awards across resource categories, 2014–2021.

Year	Level	High Seg & Poverty	Low Resource	Moderate Resource	High Resource	Highest Resource	High + Highest	N
2014	Project	30.49	26.83	25.61	10.98	6.10	17.08	82
	Units	27.12	30.81	26.90	11.24	3.93	15.17	4,859
2015	Project	40.91	22.73	17.05	14.77	4.55	19.32	88
	Units	43.17	22.98	14.65	14.28	4.92	19.20	4,839
2016	Project	24.68	35.06	16.88	11.69	11.69	23.38	77
	Units	26.50	37.63	17.14	9.57	9.16	18.73	4,212
2017	Project	28.13	34.38	15.63	15.63	6.25	21.88	64
	Units	30.47	30.80	13.04	17.66	8.03	25.69	3,912
2018	Project	26.09	27.54	21.74	15.94	8.70	24.64	69
	Units	30.80	24.75	21.90	15.88	6.67	22.55	4,182
2019	Project	16.39	39.34	16.39	13.11	14.75	27.86	61
	Units	19.75	38.96	15.45	12.51	13.33	25.84	3,398
2020	Project	22.64	22.64	30.19	9.43	15.09	24.52	53
	Units	21.05	21.94	32.45	8.38	16.18	24.56	3,054
2021	Project	29.63	31.48	16.67	18.52	3.70	22.22	54
	Units	30.50	32.24	17.03	18.21	2.03	20.24	3,207

In 2020, one project was classified as Moderate (Rapidly Changing); we combine this category with "Moderate Resource."

Table A4. Logistic regression models predicting 9% LIHTC application and award location in high or highest resource area.

	Applications						Awards							
	Projects				Units				Projects				Units			
Post Incentive	0.855		1.132		0.714	***	1.029		0.904		1.010		0.862	***	1.089	
	(0.158)		(0.357)		(0.017)		(0.042)		(0.240)		(0.474)		(0.030)		(0.069)	
Eligible	0.737		0.625	*	0.590	***	0.486	***	0.542	*	0.489	*	0.433	***	0.426	***
	(0.140)		(0.128)		(0.015)		(0.014)		(0.164)		(0.160)		(0.018)		(0.020)	
Post Incentive x Eligible	1.968	*	2.031	*	2.554	***	2.335	***	2.716	*	2.727	*	2.957	***	2.725	***
	(0.560)		(0.601)		(0.097)		(0.093)		(1.161)		(1.211)		(0.174)		(0.166)	
Controls	N		Y		N		Y		N		Y		N		Y	
Constant	0.325	***	0.437	*	0.350	***	0.322	***	0.319	***	0.631		0.322	***	0.383	***
	(0.039)		(0.156)		(0.005)		(0.016)		(0.055)		(0.330)		(0.007)		(0.028)	
N	1,160		1,160		67,630		67,630		548		525		31,663		30,235	

Cells present odds ratios and standard errors. Predicted probabilities are presented in Tables 1 and 2 for the project-level analyses. "Units" columns reflect results weighted by number of units. Controls include year and region fixed effects, number of units, annual federal tax credit amount requested, and location in a Difficult to Develop Area or Qualified Census Tract. Pre-incentive years are 2014–2017; post-incentive years are 2018–2021. Eligible developments are large family, new construction; all other development types are ineligible. *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

Table A5. Distribution of 9% LIHTC applications and awards by type, location, period.

| | Pre-Incentive | | | | Post-Incentive | | | | Percent Change, Pre to Post | |
| | Applications | | Awards | | Applications | | Awards | | | |
Project Type	N	%	N	%	N	%	N	%	Applications	Awards
Eligible (Large Family, New Construction)	295	44%	129	41%	195	39%	94	40%	−34%	−27%
Ineligible										
Large Family, Rehabilitation	45	7%	25	8%	30	6%	15	6%	−33%	−40%
Senior	150	23%	60	19%	104	21%	33	14%	−31%	−45%
At-Risk	49	7%	29	9%	45	9%	25	11%	−8%	−14%
Special Needs	112	17%	61	20%	120	24%	70	30%	7%	15%
Single Room Occupancy	15	2%	7	2%	–	0%	–	0%	−34%	−27%
Total	**666**	**100%**	**311**	**100%**	**494**	**100%**	**237**	**100%**	**-26%**	**-24%**
Project Location by Type										
Eligible, in High/Highest Resource	57	19%	19	15%	56	29%	28	30%	−2%	47%
Ineligible, in High/Highest Resource	91	25%	44	24%	65	22%	32	22%	−29%	−27%

Pre-incentive years are 2014–2017; post-incentive years are 2018–2021. Eligible developments are large family, new construction; all other development types are ineligible. At Risk housing indicates properties at risk of conversation from affordable to market-rate. Special needs indicates housing for groups including disabled, female-headed households, farmworkers, and those experiencing homelessness. Single Room Occupancy was not a QAP category after 2017.

Table A6. Logistic regression model predicting receiving tax credit awards by QAP incentives eligibility and location in high or highest resource area by incentive period.

	Odds Ratio (Standard Error)
Post Incentive	0.991
	(0.124)
Eligible + High/Highest	0.543*
	(0.159)
Post Incentive x Eligible + High/Highest	2.019^
	(0.823)
Constant	0.921
	(0.075)
N	1,160

Cells present odds ratios and standard errors. Predicted probabilities are presented in Table 3. Application type is either (1) incentives-eligible project type and located in a high or highest resource area or (2) all other applications (incentives-ineligible and incentives-eligible but not located in a high or highest resource area). ^$p \le$.10; *$p \le$ .05; **$p \le$ .01; ***$p \le$ .001.

Table A7. Number of total and eligible applications and share of eligible applications in high or highest resource areas by city, pre- and post-incentive.

City	Pre-Incentive			Post-Incentive		
	Total Applications	Eligible	% of Eligible in High/ Highest Resource Area	Total Applications	Eligible	% of Eligible in High/ Highest Resource Area
Alameda	4	3	100%	2	0	
Alpine	0	0		1	1	100%
Anaheim	3	1	0%	4	2	0%
Antioch	4	0		0	0	
Arcata	4	3	0%	2	2	100%
Armona	1	0		2	0	
Arroyo Grande	0	0		1	1	0%
Arvin	1	0		0	0	
Arvin; McFarland	0	0		2	0	
Arvin; McFarland; Shafter; Wasco	0	0		2	0	
Arvin; Wasco	0	0		2	0	
Atascadero	1	1	0%	3	1	100%
Atwater	1	0		0	0	
Auburn	1	1	0%	2	1	0%
Bakersfield	7	3	0%	12	9	11%
Baldwin Park	1	1	0%	2	2	0%
Barstow	2	2	0%	0	0	
Beaumont	2	0		0	0	
Berkeley	6	0		0	0	
Bishop	1	1	0%	0	0	
Bloomington	3	3	0%	1	1	0%
Brawley	4	2	100%	4	4	25%
Brea	0	0		1	0	
Buena Park	1	1	0%	2	0	
Calexico	1	0		7	3	0%
Calistoga	1	0		0	0	
Cambria; Morro Bay; Atascadero	0	0		1	0	
Carlsbad	0	0		1	0	
Carmichael	1	0		0	0	
Carson	4	2	100%	0	0	
Castroville	1	1	0%	0	0	
Cathedral City	0	0		1	0	
Chico	2	0		1	1	100%
Citrus Heights	0	0		3	0	
Cloverdale	1	1	100%	2	2	0%
Clovis	0	0		1	1	100%
Coachella	3	3	0%	1	1	0%
Coalinga	4	1	0%	0	0	
Colusa	0	0		1	0	
Compton	1	0		0	0	
Concord	0	0		1	0	
Corning	0	0		1	0	
Corona	2	2	0%	0	0	
Crescent City	7	5	0%	2	0	
Cupertino	1	0		1	0	
Daly City	1	1	0%	0	0	
Danville	0	0		2	0	
Davis	3	3	100%	0	0	
Delano	1	0		1	1	0%
Desert Hot Springs	2	0		0	0	
Diamond Springs	1	1	0%	1	1	0%
Dinuba	3	0		7	6	100%
Dos Palos	0	0		2	0	
East Los Angeles	0	0		1	0	
East Palo Alto	1	0		1	0	
El Cajon	0	0		2	0	
El Cerrito	1	0		0	0	
El Monte	3	2	0%	5	3	0%

(Continued)

Table A7. (Continued).

City	Pre-Incentive			Post-Incentive		
	Total Applications	Eligible	% of Eligible in High/Highest Resource Area	Total Applications	Eligible	% of Eligible in High/Highest Resource Area
Elk Grove	1	1	0%	3	3	100%
Emeryville	1	1	0%	0	0	
Escondido	4	0		2	1	0%
Eureka	4	3	100%	8	0	
Exeter	1	1	0%	0	0	
Fairfax	1	0		1	0	
Fairfield	0	0		4	0	
Farmersville	0	0		3	3	0%
Firebaugh	1	0		0	0	
Firebaugh; Mendota	1	0		1	0	
Folsom	1	1	100%	3	3	100%
Fontana	3	3	0%	1	1	0%
Fort Bragg	2	0		2	1	100%
Fortuna	1	0		0	0	
Foster City	1	0		0	0	
Fountain Valley	0	0		2	2	0%
Fowler	7	4	0%	2	0	
Fremont	5	2	100%	9	3	100%
French Camp	0	0		1	0	
Fresno	12	4	0%	10	0	
Fullerton	5	3	0%	0	0	
Glendale	3	1	100%	1	0	
Grass Valley	4	0		3	0	
Greenfield	4	1	0%	3	2	0%
Gridley	0	0		3	0	
Guadalupe	0	0		2	2	0%
Gustine	2	0		0	0	
Healdsburg	1	1	0%	1	1	0%
Heber	0	0		1	1	0%
Hemet	2	0		0	0	
Hollister	4	2	0%	0	0	
Holtville	0	0		1	1	100%
Hoopa	2	0		0	0	
Huntington Park	3	1	0%	0	0	
Huron	3	2	0%	0	0	
Imperial	1	1	100%	1	0	
Indio	5	5	0%	2	2	0%
Inglewood	1	0		2	2	0%
Irvine	1	1	0%	0	0	
Jamestown	0	0		1	0	
Jurupa Valley	1	1	0%	0	0	
Kelseyville	0	0		1	1	100%
Kerman	3	3	100%	3	3	100%
Kingsburg	2	0		1	0	
La Habra	0	0		1	1	0%
La Puente	8	0		1	0	
La Quinta	1	0		0	0	
La Verne	1	0		0	0	
Lake Elsinore	0	0		2	0	
Lake Forest	0	0		1	1	0%
Lakeport	0	0		2	2	100%
Lancaster	2	0		4	0	
Lemoore	6	0		3	0	
Lincoln	3	0		1	1	0%
Lindsay	4	0		11	1	0%
Live Oak	2	2	100%	0	0	
Livermore	1	0		5	2	0%
Livingston	0	0		1	0	
Lodi	4	0		0	0	
Loma Linda	1	0		0	0	
Lompoc	5	2	0%	5	2	0%

(*Continued*)

Table A7. (Continued).

City	Pre-Incentive			Post-Incentive		
	Total Applications	Eligible	% of Eligible in High/ Highest Resource Area	Total Applications	Eligible	% of Eligible in High/ Highest Resource Area
Long Beach	4	0		8	3	0%
Los Angeles	54	17	0%	34	13	8%
Los Banos	3	0		0	0	
Los Molinos	2	0		0	0	
Lost Hills	1	1	0%	0	0	
Loyalton	0	0		2	0	
Lynwood	1	0		0	0	
Madera	1	1	0%	1	1	0%
Manteca	4	0		0	0	
Marina	5	0		0	0	
Mariposa	0	0		5	3	0%
Markleeville	3	0		0	0	
Marysville	0	0		1	1	100%
Marysville;Linda	1	0		0	0	
McFarland	2	2	0%	2	2	0%
McFarland;Wasco	2	0		0	0	
Mecca	2	2	0%	0	0	
Mendota	0	0		2	0	
Menlo Park	2	0		0	0	
Midway City	0	0		1	0	
Modesto	1	0		1	0	
Montebello	0	0		2	1	0%
Monterey	1	0		0	0	
Monterey Park	2	0		0	0	
Moorpark	2	2	100%	0	0	
Moreno Valley	1	1	0%	1	1	0%
Morgan Hill	1	1	0%	0	0	
Morro Bay	1	0		1	1	100%
Mountain View	1	0		0	0	
Napa	5	5	0%	0	0	
National City	1	1	0%	0	0	
Newport Beach	1	0		0	0	
Nipomo	0	0		3	0	
North Fork	0	0		2	2	0%
North Highlands	0	0		1	0	
North Hollywood	0	0		1	0	
Norwalk	0	0		1	1	0%
Oakdale	1	0		2	2	0%
Oakhurst	2	0		2	1	100%
Oakland	15	12	0%	5	1	0%
Oceanside	4	2	0%	0	0	
Ontario	1	1	0%	1	1	0%
Orange	2	0		0	0	
Orange Cove	3	2	0%	0	0	
Orland	0	0		1	0	
Oroville	2	0		0	0	
Oxnard	2	2	0%	0	0	
Palm Desert	3	0		1	0	
Palm Springs	0	0		1	1	100%
Palmdale	2	2	0%	1	1	0%
Panorama City	0	0		1	0	
Parlier	3	2	0%	1	0	
Parlier; San Joaquin	0	0		2	0	
Pasadena	3	0		1	0	
Paso Robles	5	3	0%	2	1	0%
Paso Roles	1	0		0	0	
Patterson	0	0		1	1	0%
Penn Valley	0	0		3	0	
Petaluma	0	0		1	0	
Piru	2	2	0%	0	0	
Pismo Beach	0	0		2	0	

(*Continued*)

Table A7. (Continued).

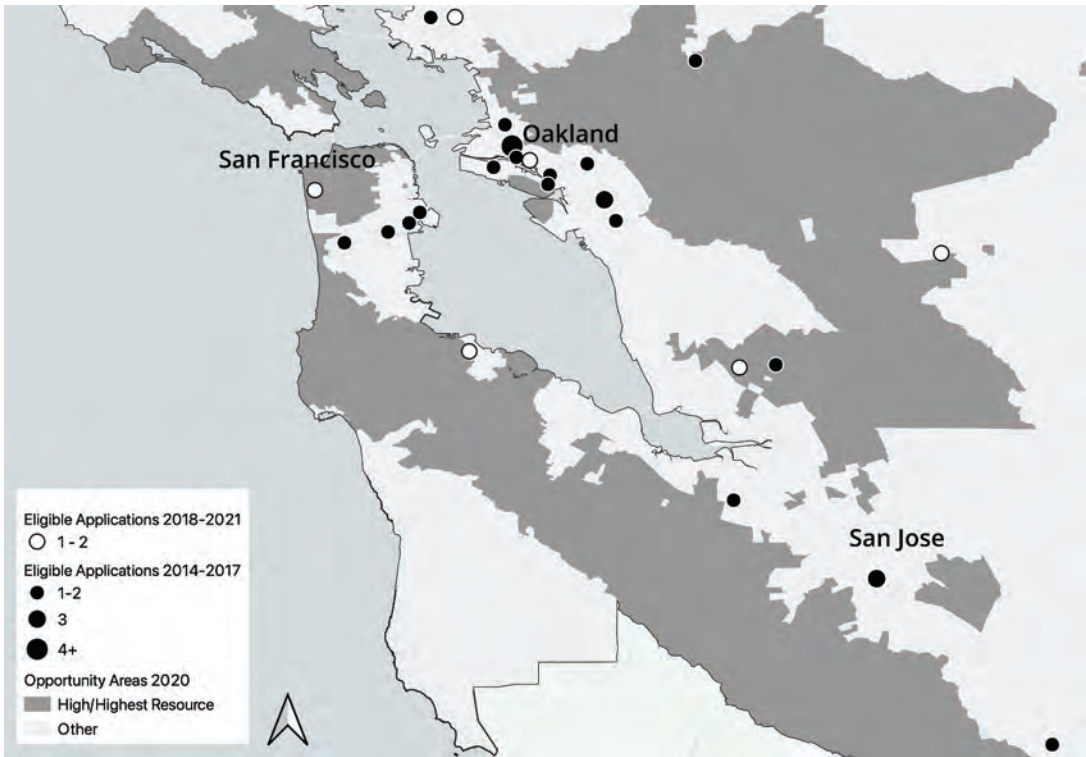|	Pre-Incentive			Post-Incentive		
City	Total Applications	Eligible	% of Eligible in High/ Highest Resource Area	Total Applications	Eligible	% of Eligible in High/ Highest Resource Area
Placerville	1	0		0	0	
Pleasanton	2	0		2	0	
Pomona	8	5	0%	2	2	0%
Porterville	1	1	0%	1	1	0%
Portola	0	0		2	0	
Poway	1	0		2	0	
Quincy	0	0		1	0	
Ramona	1	0		0	0	
Rancho Cordova	6	1	0%	1	1	0%
Rancho Cucamonga	4	0		2	0	
Red Bluff	1	0		0	0	
Redding	3	3	0%	6	3	0%
Redwood City	1	0		3	0	
Redwood Valley	1	1	0%	0	0	
Reedley	3	2	50%	3	3	100%
Rialto	5	3	0%	2	2	0%
Richmond	2	1	0%	0	0	
Rio Dell	0	0		1	0	
Riverbank	2	2	0%	0	0	
Riverside	1	1	0%	5	3	0%
Roseville	3	3	33%	1	1	100%
Sacramento	7	0		8	1	0%
Salinas	5	2	0%	2	0	
Samoa	1	1	0%	2	2	0%
San Andreas	1	0		0	0	
San Bernardino	4	3	0%	0	0	
San Diego	22	9	11%	12	3	0%
San Francisco	9	4	0%	7	1	100%
San Jacinto	2	0		1	0	
San Joaquin	1	0		0	0	
San Jose	8	3	0%	3	0	
San Leandro	2	1	0%	1	0	
San Lorenzo	1	0		0	0	
San Luis Obispo	5	2	50%	2	2	100%
San Marcos	12	12	0%	3	2	0%
San Mateo	0	0		1	1	0%
San Pablo	0	0		1	1	0%
San Rafael	0	0		1	0	
San Ysidro	0	0		1	0	
Sanger	5	5	0%	2	2	0%
Santa Ana	7	4	0%	5	1	0%
Santa Barbara	12	4	0%	3	0	
Santa Clarita	1	1	0%	0	0	
Santa Cruz	8	4	100%	1	1	100%
Santa Maria	7	3	0%	2	0	
Santa Monica	1	1	100%	5	3	100%
Santa Paula	0	0		1	1	0%
Santa Rosa	3	2	0%	4	3	0%
Santa Ynez	2	1	100%	1	0	
Sebastopol	0	0		1	1	100%
Selma	3	3	33%	0	0	
Signal Hill	1	1	0%	0	0	
Smith River	0	0		1	1	100%
Solvang	1	0		0	0	
Sonoma	4	1	0%	7	2	0%
Sonora	1	0		2	0	
South Gate	0	0		2	0	
South San Francisco	0	0		1	0	
South Whittier	0	0		1	0	
Stanton	0	0		2	0	
Stockton	14	2	0%	5	3	0%

Table A7. (Continued).

City	Pre-Incentive			Post-Incentive		
	Total Applications	Eligible	% of Eligible in High/ Highest Resource Area	Total Applications	Eligible	% of Eligible in High/ Highest Resource Area
Sunnyvale	2	1	100%	1	0	
Susanville	1	0		1	0	
Tehachapi	2	0		0	0	
Temecula	5	4	100%	6	6	100%
Templeton	3	3	100%	4	0	
Tracy	2	0		0	0	
Truckee	3	3	100%	4	1	100%
Tulare	4	1	0%	3	3	0%
Turlock	3	3	0%	5	3	0%
Twentynine Palms	3	0		0	0	
Ukiah	3	1	0%	3	2	0%
Unincorp. Los Angeles	6	1	0%	6	2	0%
Unincorp. Sacramento	0	0		1	1	0%
Unincorp. San Bernardino	2	2	0%	0	0	
Unincorp. Santa Cruz	1	0		0	0	
Vacaville	0	0		1	0	
Valley Center	0	0		4	4	0%
Ventura	11	6	0%	2	0	
Visalia	4	4	25%	4	0	
Vista	2	0		4	2	0%
Walnut Creek	3	1	100%	0	0	
Wasco	2	1	0%	0	0	
Watsonville	1	1	0%	0	0	
Weitchpec	0	0		2	0	
West Hollywood	2	0		0	0	
West Sacramento	5	5	0%	1	0	
Westminster	0	0		2	1	0%
Wheatland	0	0		3	0	
Williams	5	3	100%	0	0	
Willits	1	0		0	0	
Winterhaven	1	1	100%	2	0	
Winters	2	0		0	0	
Woodlake	3	3	100%	2	0	
Woodland	3	3	0%	0	0	
Yorba Linda	4	4	0%	0	0	
Yreka	2	1	0%	0	0	
Yuba City	0	0		5	0	
Yucaipa	1	0		0	0	

Cities with bolded names had incentives-eligible applications in both periods. Multiple cities indicate scattered site projects that span several small municipalities.

Figure A1. Map of incentives-eligible 9% LIHTC applications in the Bay area, pre- and post-incentive period. Gray areas are high or highest resource.
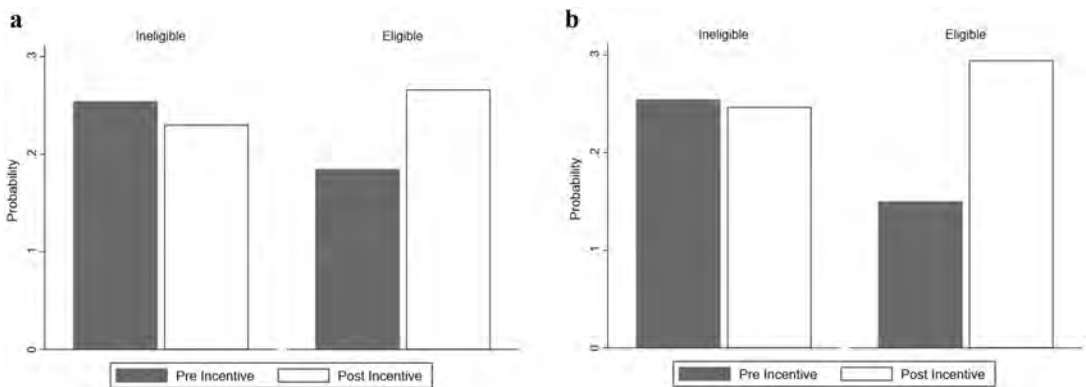
Figure A2. (a) Predicted probabilities of 9% LIHTC applications in high or highest resource areas, pre- and post-incentive (2019–2021). (b) Predicted probabilities of 9% LIHTC awards in high or highest resource areas, pre- and post-incentive (2019–2021). The figure replicates Figure 3a,b for post-incentive years 2019–2021; pre-incentive years are 2014–2018. Eligible developments are large family, new construction; all other developments are ineligible.