INCLUSIONARY HOUSING: 
THE IMPACT OF PROGRAM FLEXIBILITY ON PROGRAM SUCCESS

A Thesis
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Masters of Arts in Public Policy

By

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Abstract
Inclusionary zoning is an increasingly popular and controversial tool for creating affordable housing. More than 500 jurisdictions have inclusionary zoning ordinances. Despite the popularity of inclusionary programs nationwide, research on the subject is largely fragmented, and there is a real dearth of empirical research to support policymakers in their decision to implement inclusionary housing. Specifically, cities lack sufficient information about the most successful policy structures and the environment to which they are best suited. This study addresses that gap, exploring the extent to which more flexible inclusionary housing programs in California produce more affordable housing.
# Table of Contents

INTRODUCTION .......................................................................................................................... 1  

BACKGROUND .......................................................................................................................... 2  

LITERATURE REVIEW .................................................................................................................. 5  
   I. CONTEXT OF INCLUSIONARY HOUSING ADOPTION ......................................................... 6  
      Where do we see inclusionary programs? ........................................................................... 6  
      What types of jurisdictions adopt inclusionary housing? ............................................... 7  
      Why do jurisdictions adopt inclusionary housing? ...................................................... 7  
   II. PROGRAM VARIATION ....................................................................................................... 8  
      National Variation ......................................................................................................... 8  
      Regional Variation ...................................................................................................... 8  
      Local Variation ........................................................................................................... 9  
      Variation – what works best? ...................................................................................... 10  
   III. INCLUSIONARY GOALS AND SUCCESS ........................................................................ 11  
      Goals ............................................................................................................................ 11  
      Success: Production of affordable housing ............................................................. 11  
      Success: Socioeconomic Integration ......................................................................... 13  
   IV. UNINTENDED CONSEQUENCES .................................................................................... 14  
      Consequences: reduction in housing supply, & impact on type of housing supplied .... 14  
      Consequences: increased prices of market rate housing .......................................... 15  
   V. CONCLUSIONS .................................................................................................................. 15  

CONCEPTUAL MODEL .............................................................................................................. 16  

DATA AND VARIABLES .............................................................................................................. 19  

METHODOLOGICAL APPROACH ............................................................................................. 21  

DESCRIPTION OF DATA .......................................................................................................... 22  

RESULTS .................................................................................................................................... 28  
   I. REGRESSION RESULTS .................................................................................................... 28  
      Policy Structure .......................................................................................................... 28  
      Housing Market Strength ........................................................................................... 30  
      Demographics ............................................................................................................ 30  
   II. ROBUSTNESS .................................................................................................................. 34  

RESEARCH LIMITATIONS AND POLICY IMPLICATIONS ..................................................... 35  
   I. LIMITATIONS .................................................................................................................. 35  
   II. IMPLICATIONS .............................................................................................................. 37  

CONCLUSIONS .......................................................................................................................... 37  

APPENDIX .................................................................................................................................. 40  

BIBLIOGRAPHY .......................................................................................................................... 43
List of Tables

Table 1: Sample Policy Structure Descriptive Statistics in 2006 ........................................... 23

Table 2: Sample Demographics in 2010...................................................................................... 24

Table 3: Sample Market Strength in 2010.................................................................................... 26

Table 4: Regression Results ............................................................................................................ 33

Table 5: Model Sensitivity to Changes in the Covariates ............................................................... 41

Table 6: Model Sensitivity to Changes in Functional Form .......................................................... 42
List of Figures

Figure 1: Graph of California Residential Construction as a Proportion of Total U.S. Construction Since 1963 ................................................................. 2

Figure 2: Graph of California Residential Construction between 2000 and 2014 ............ 3

Figure 3: Housing Supply, Demand and Zoning ....................................................... 17

Figure 4: Determinants of Housing Demand .......................................................... 18

Figure 5: Determinants of Housing Supply ............................................................. 18

Figure 6: Zoning Characteristics ............................................................................. 19

Figure 7: Geographic Distribution of Sample Data across the State of California .......... 22

Figure 8: Map of California Housing Market Vacancies by County ........................... 25

Figure 9: The Relationship between Geography, Population and the Production of Affordable Housing ................................................................. 27

Figure 10: California Demographics ....................................................................... 40
Introduction

Inclusionary zoning is an increasingly popular and controversial tool for creating affordable housing. More than 500 jurisdictions have inclusionary zoning ordinances. New York City recently passed mandatory inclusionary zoning, arguably one of the strongest manifestations of its type in the country. Proponents argue that these policies are more cost effective, creating affordable housing with less public subsidy, and that they encourage the creation of mixed-income communities. Critics argue that inclusionary zoning stifles the development of market rate units, constricting the supply and driving up prices.

Despite the popularity of inclusionary programs nationwide, research on the subject is largely fragmented, and there is little empirical research to support policymakers in their decision to implement inclusionary housing. Specifically, cities lack sufficient information about the most successful policy structures and the environment to which they are best suited. This study addresses that gap, exploring the extent to which more flexible inclusionary housing programs in California produce more affordable housing.

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1 Inclusionary zoning regulations (IZ) encourage housing developers to create affordable rental housing units. IZ ranges in flexibility, from voluntary regulations that offer incentives (such as density bonuses), to stricter mandatory programs that require the provision of affordable housing above a certain size.
3 Ibid.
Background

While much of the country is rebounding in the wake of the housing crisis, the national recovery and California’s recovery has been uneven. Figures 1 shows California residential construction as a percentage of overall U.S. construction since 1963. Since the 60’s, residential construction in California has declined both in the total number of residential units produced, and as a proportion of overall U.S. construction.4

Figure 1: Graph of California Residential Construction as a Proportion of Total U.S. Construction Since 1963

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California residential construction was also hit particularly hard in the Great Recession and has yet to completely recover, as seen in Figure 2.

**Figure 2: Graph of California Residential Construction between 2000 and 2014**

On a national level, incomes were hurt in the recession but have risen since 2009. Between 2009 and 2012, the median income of American household owners rose by two percent. Incomes grew slightly faster than housing costs, which fell by 5.1 percent. Consequently, the percentage of severely burdened homeowners decreased. Renter incomes also increased; the median income of household renters rose by a little over five percent. Yet, this was largely offset by rising housing costs for renters (an increase of 3.9
percent). The foreclosure crisis also drove additional renters into the market, and increasingly tight capital markets have kept would-be homebuyers from purchasing homes. Renter households are more than twice as likely to be severely cost burdened as non-renters. One in four working households will spend more than half their income on rent.5

Affordability also varies regionally. High cost metro areas on the coasts, like California and New York, have greater affordability challenges than states in the Midwest. In Minnesota the percentage of severely cost burdened households fell from 17.2 percent to 14.3 percent between 2009 and 2012. Arkansas saw the greatest improvement, with the population of households that were severely cost burdened falling by 3.8 percent. However in New York, Louisville, and the Virginia Beach metro areas the percentage of severely cost burdened renter households actually increased in this period. In the District of Columbia the percentage of severely burdened households also increased from 23.1 to 25.1 percent. For millions of Americans, affordability is still a challenge. Overall, 18.1 million households were severely cost burdened in 2012. 6

The term “affordable housing” can describe either subsidized or market rate housing, and refers to housing with monthly costs that are no more than 30 percent of a household’s income. Eligibility for subsidized housing is frequently determined by the area median income (AMI). While problems surrounding housing affordability persist, state and federal policy has failed to meet this demand. The population of low-income renters has grown as a percentage of the total population, but federal funding for

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6 Ibid.
affordable housing has actually decreased in recent years. In the absence of significant federal or state action to address affordability challenges, cities and counties have been stepping into the gap and implementing inclusionary housing policies.  

**Literature Review**

“Inclusionary housing” refers to land use policies that link the construction of market rate housing to the creation of affordable housing. The lack of reliable empirical research on inclusionary programs is due in large part to a lack of reliable data on program design and affordable housing production. Nevertheless, research on the subject is accumulating and focuses on the types of jurisdictions that adopt inclusionary housing, variations in program structure, evidence of program success and unintended consequences.

A review of the literature reveals four general findings: (1) Most jurisdictions that adopt inclusionary programs are large, affluent, clustered geographically and have other affordable housing programs; (2) program design varies at the national and local level; (3) programs produce affordable housing and may support socioeconomic integration, although success varies considerably, and (4) there is some evidence to suggest that inclusionary programs may constrain the housing supply and put upward pressure on the prices of market rate housing.

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I. Context of Inclusionary Housing Adoption

Jurisdictions adopting these policies are often large, affluent, clustered geographically, and frequently have in place packages of other affordable housing programs.

Where do we see inclusionary programs?

Inclusionary programs are becoming increasingly popular, and there are about 500 programs nationwide. Robert Hickey, Lisa Sturtevant and Emily Thaden offer one of the most comprehensive assessments of the distribution of these policies in a 2014 Lincoln Institute of Land Policy working paper. Existing data on these programs is highly fragmented, and this paper provides a national program directory, one of the first of its kind. They estimate that 507 inclusionary programs exist across 482 jurisdictions.8 This estimate is corroborated by Rick Jacobus’s 2015 study, “Inclusionary Housing: Creating and Maintaining Equitable Communities,” which identifies 512 inclusionary programs across 487 jurisdictions and 27 states.9

Both studies also find that the majority of programs are highly clustered; of 507 total programs, 36 percent are located in New Jersey, and 29 percent are in California. Recently though, inclusionary programs have been gaining popularity elsewhere. New York, Colorado, Rhode Island, and North Carolina all have inclusionary programs in 10 or more jurisdictions. Voluntary programs have gained popularity in Minnesota, Georgia and Tennessee, where Hickey et al. note that it is, “difficult to generate political will for mandatory programs.”10

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10 Hickey et al., pp. 18. Also see Jacobus, pp. 8-9.
What types of jurisdictions adopt inclusionary housing?

Jacobus studied 13 large cities with inclusionary housing policies and found that most cities with these policies also have a package of other affordable housing programs, including tax-exempt bonds, land banks and community land trusts, along with the allocation of local tax revenues to support a housing trust fund. Half of the cities with inclusionary programs employed tax increment financing, and some exempted affordable housing projects from paying property taxes altogether.\(^\text{11}\)

A 2007 Furman Center working paper by Jenny Schuetz, Rachel Meltzer and Vicki Been also explores the types of jurisdictions that adopt inclusionary housing. Their regression analysis finds a positive correlation between having inclusionary programs and other types of regulations, such as growth management and cluster zoning.\(^\text{12}\) Through interviews and survey results, the 2007 paper also found that larger and more affluent jurisdictions are more likely to adopt inclusionary policies. Proximity to other jurisdictions with inclusionary housing also increases the likelihood of adoption. Schuetz et al. mention a bandwagon effect, suggesting that, “jurisdictions learn from the experiences of their neighbors [with] promising or trendy policies.”\(^\text{13}\)

Why do jurisdictions adopt inclusionary housing?

A 2012 literature review prepared by The Urban Institute for the U.S. Department of Housing and Urban Development (HUD) notes that rising housing prices and

\(^{11}\) Jacobus, pp. 8-9.


decreasing affordability often motivate implementation of inclusionary programs. Ann Hollingshead’s thesis, “When and How Should Cities Implement Inclusionary Housing Policies?” notes that cities have become even more interested in providing affordable housing in the wake of the Great Recession.

II. Program Variation

While data on program adoption reveals that certain cities are more likely to adopt inclusionary housing than others, the policy structure is highly varied at the national, regional and local level.

National Variation

Hickey et al.’s national directory reveals that of the 507 programs surveyed, 83 percent are mandatory and 17 percent are voluntary. About 330 programs provided information on their “affordability period,” the amount of time that a unit is required to be affordable. About 33 percent of these require perpetual affordability, and a minority of programs require affordability for less than 15 years, impacting12 percent of owner occupied and 15 percent of renter occupied affordable units. Hickey et al.’s analysis also documents substantial variation across a range of other indicators, including depth of affordability, trigger size (the minimum project size triggering compliance to the policy), alternatives to construction and developer incentives.

Regional Variation

Schuetz et al.’s 2007 working paper looked at inclusionary programs in the San Francisco Bay Area, Massachusetts and DC, and found significant variation between

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15 Hollingshead, pp. 1-3.

16 Hickey et al., pp. 20.
programs in different regions. Compared with Boston Area programs, those in San Francisco were more likely to be established earlier, required mandatory compliance and were broadly applicable to different sizes and types of developments. In addition, Bay Area programs were more likely to offer in-lieu fee payments.\textsuperscript{17} DC area programs are mostly mandatory, but are only applicable to very large developments. The affordability period in DC is often shorter than what is required in the Boston suburbs, or in San Francisco.\textsuperscript{18}

Local Variation
A handful of studies have also documented variation across jurisdictions within the same state. A 2007 collaborative report by the Non-profit Housing Association of Northern California (NPHA), California Coalition for Rural Housing (CCRH), San Diego Housing Federation and the Sacramento Housing Alliance, “Affordable by Choice,” explores variation across California. Most programs are mandatory, but vary by the income group targeted for the housing. The San Francisco Bay Area had the highest number of inclusionary programs (38 programs), and Sacramento stands out with programs that are deeply targeted to very low- and extremely low-income households; about 42 percent of affordable housing units produced were targeted to these populations. In Southern California, 32 percent of units were affordable for these households. The Bay Area only requires 19 percent of units to be affordable for households in these categories.\textsuperscript{19}

\textsuperscript{17} In-lieu fee payments allow developers to pay a fee instead of building affordable units on-site.
\textsuperscript{18} Schuetz et al. (2007), pp. 60-76.
\textsuperscript{19} “Affordable by Choice: Trends in California Inclusionary Housing Programs,” Non-Profit Housing Association of Northern California, California Coalition for Rural Housing, San Diego Housing Federation and the Sacramento Housing Alliance (2007), pp. 22.
Due to a dearth of data, Massachusetts is the only other state for which program variation has been analyzed at the local level. Brian Blaesser, Mark Bobrowski, Robert Engler, Philip Herr, Roger Herzog, Darcy Jameson, Jerold Kayden, Meg Kiely, and Clark Ziegler’s 2002 paper, “Inclusionary Zoning: Lessons learned in Massachusetts” also identified significant variation. Some programs were mandatory, while others were voluntary. Some applied only to certain locations or types of developments (i.e. cluster housing), or to developments above a certain size.  

**Variation – what works best?**

Despite the abundance of program variation, there is not a lot of empirical evidence to suggest which policy structure is most effective. Hickey’s 2015 qualitative research brief, “Making Inclusionary Housing More Flexible: Four Ideas for Urban Settings,” explores program flexibility, and highlights promising programs that improve feasibility by offering developers multiple options for meeting affordability requirements. Drawing from case studies in California, Maryland, Colorado, Massachusetts and New York, Hickey makes four recommendations: (1) Permit off-site development to occur in multiple locations; (2) offer options to preserve or increase affordability of existing housing; (3) restrict fee-revenue spending to broadly designated areas; and (4) increase flexibility regarding the income groups served.  

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III. Inclusionary Goals and Success

Goals

The goals of inclusionary programs are best summarized by the Urban Institute’s 2012 literature review: (1) keeping low and middle income households from being displaced in the face of rising property values and stagnant wages; (2) retaining low-wage workers in cities to sustain a critical supply of low-wage labor (i.e. child care workers, janitors, home health aids and policemen); (3) decreasing sprawl; and (4) promoting racial and socioeconomic integration.\(^\text{22}\)

Limited research has been done to evaluate the extent to which inclusionary programs achieve their stated goals. For the most part, research has focused on inclusionary housing’s ability to produce affordable housing and, to a lesser extent, its ability to promote socioeconomic integration. The literature generally finds that policies have succeeded on both counts, although success is inconsistent and more research is needed to evaluate the success of these programs.

Success: Production of affordable housing

In a follow up to Schuetz et al.’s 2007 working paper, Jenny Schuetz, Rachel Meltzer and Vicki Been evaluate the success of inclusionary programs in the San Francisco Bay Area, Boston suburbs and DC. Their 2011 paper, “Silver Bullet or Trojan Horse? The Effects of Inclusionary Zoning on Local Housing Markets in The United States,” finds that almost all of the Bay Area programs produced some amount of affordable housing. The median number of affordable units produced was 85 over the program’s lifetime (about 7 units per year). All DC area counties with mandatory

\(^{22}\) Urban Institute, pp. 85.
programs also produced some amount of affordable housing. The median over that program’s existence was about 1668 (about 227 units per county).\(^\text{23}\)

Massachusetts-based programs have been less successful. Half reported that no affordable units had been built, while a substantial proportion failed to report any production statistics. However, the authors note that this could reflect the late adoption of many of the Boston area programs. Indeed, regression analysis of the Bay Area programs reveals that the length of time a program has been in place was the greatest predictor of the number of units produced.\(^\text{24}\) A 1% increase in the time since inclusionary housing was adopted is associated with an almost 1% increase in the number of affordable units produced. Older and more established programs seem to produce more affordable units. Schuetz et al. also found that the number of units constructed increases as the minimum project size triggering inclusionary zoning increases. Programs offering density bonuses are also associated with a higher number of affordable units produced, but the coefficient is only significant at the 90% level.\(^\text{25}\)

A separate 2012 report prepared by The Urban Institute for HUD entitled, “Expanding Housing Opportunities Through Inclusionary Zoning: Lessons from Two Counties,” examined two case studies of inclusionary zoning programs in Montgomery County, Maryland and Fairfax, Virginia. The study found that both programs had produced a considerable amount of affordable housing over time. However production was not consistent, and in some years programs resulted in large amounts of affordable units, but in other years they were less successful. Through interviews, developers

\(^{23}\) Jenny Schuetz, Rachel Meltzer and Vicki Been, “Silver Bullet or Trojan Horse? The Effects of Inclusionary Zoning on Local Housing Markets in the United States,” Urban Studies (February 2011).

\(^{24}\) Schuetz et al. (2007), pp. 78.

identified program predictability as the most important component to program success. The report recommends that, “requirements need to be clear and administered consistently so that developers can reliably estimate their profit.”

**Success: Socioeconomic Integration**

Less research has been done to determine the extent to which inclusionary housing promotes socioeconomic integration, but Heather Schwartz’s 2010 study does provide some answers. Schwartz explored the impact of inclusionary housing on grade school student success in Montgomery County. Specifically, Schwartz found that children residing in inclusionary public housing attend lower poverty schools than their public housing counterparts in higher poverty neighborhoods. Those in inclusionary housing also had better school performance; children who moved to the most affluent neighborhoods scored eight points higher in math, and five points higher in reading.

Alexandra Holmqvist’s 2009 Master’s thesis focuses on Davis, California to determine whether inclusionary zoning has increased racial and economic integration. Her results find a positive relationship between inclusionary policies and integration. However, the program fell short in its ability to integrate consistently. Low-income and very-low income groups showed only minor indications of integration compared to their middle-income counterparts, and Holmqvist found no evidence of Native American integration, compared to other racial minorities.

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IV. Unintended Consequences

The primary criticism of inclusionary housing is that it has unintended market consequences. Some economists hypothesize that inclusionary programs act like a tax on development. That is, programs make development more costly, which reduces the supply of housing in the overall market and drives up housing prices. The literature on this subject is largely inconclusive, but some evidence suggests that inclusionary programs may have a small but statistically significant impact on prices and supply.

Consequences: reduction in housing supply, & impact on type of housing supplied

Schuetz et al.’s 2011 paper found that inclusionary programs have a small but significant effect on supply in some areas, but not others. In suburban Boston, a 1% increase in the time since inclusionary housing was adopted is associated with a 0.06% decrease in annual single-family permits (significant at the 95% level). However, analysis of programs in the Bay Area found no evidence of a statistically significant effect of inclusionary housing on single-family permits.  

The insignificant impact on housing starts in the California market is corroborated by a 2008 University of Maryland (UMD) report produced by the National Center for Smart Growth Research and Education. The study examined California’s housing supply between 1988 and 2005, and found that inclusionary housing programs had a small but insignificant effect on housing starts. However, UMD did find that the presence of inclusionary housing increased a city’s multifamily housing starts by 7%. That is, inclusionary policies had no effect on the overall amount of housing supplied, but they may lead to changes in the composition of the housing market.  

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**Consequences: increased prices of market rate housing**

Schuetz et al.’s 2011 paper finds stronger evidence that inclusionary programs put upward pressure on prices, especially in the hot housing markets of suburban Boston. In normal markets, a 1% increase in the age of an inclusionary program is associated with a 0.014% increase in prices (weakly significant at the 90% level). However in hot housing markets, a 1% increase in the age of an inclusionary program is associated with a 0.028% increase in prices, significant at the 99% level. Scheutz et al. conclude that developers are better able to pass along the added cost of inclusionary policies to consumers when demand for housing is strong. The impact of inclusionary policies on Bay Area prices was consistent with what was seen in Boston. However, Schuetz et al. caution that due to data limitations and inconsistencies, their results should be interpreted cautiously.  

UMD’s analysis of prices in California also showed a small but statistically significant impact, finding that inclusionary programs raised prices by approximately 2.2%. However, UMD also explored the impact on higher and lower priced housing markets. Specifically, they found that inclusionary programs lowered the price of housing that sold for less than $187,000 (in 1988 dollars) by about 0.8%. For housing that sold for more than $187,000, inclusionary programs increased prices by 5%. These results suggest that price increases may not be borne equally across the market, and that inclusionary programs may actually lower the prices of cheaper market rate housing while raising prices in more expensive housing markets.  

**V. Conclusions**

A review of the literature suggests three primary findings: (1) While similar jurisdictions adopt inclusionary housing policies, program design and implementation

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32 Knaap et al., pp. 12-13.
varies substantially. (2) Programs have been successful in producing affordable housing, but their success also varies. (3) There is some evidence to suggest that inclusionary housing may promote racial and socioeconomic integration. (4) There is also evidence to suggest that inclusionary policies constrict housing supply and put upward pressure on prices, though the effect is small.

However, data limitations have produced significant gaps in the existing research. More research needs to be done to support the claims that inclusionary programs have unintended market consequences.

Another important gap is the lack of empirical evidence supporting the extent to which greater program flexibility results in greater production of affordable units. Research in this area would be useful for housing practitioners wishing to implement successful inclusionary policies tailored to their specific environment.

**Conceptual Model**

This study examines the impact of program flexibility on the production of affordable housing. Figures 3, 4, 5 and 6 represent my conceptual models for this study.

**Figure 3** outlines the primary conceptual model. My dependent variable is the supply of affordable units produced through inclusionary programs. Because inclusionary housing only produces affordable housing when residential development projects are subject to the policy, production is a function of three main components: 1) The total demand for housing in the market, 2) the total supply of housing, and 3) characteristics of local zoning policy.
Figures 4, 5 and 6 outline some of the determinants of housing demand, supply and zoning. It is important to note that when construction costs are elastic (and research suggests that this is the case), land value and zoning become some of the primary determinants of housing supply. However, they may also interact with one another. Zoning regulation may artificially inflate land values, making it more costly for developers to construct housing. Yet it is equally possible to imagine that inclusionary housing would be implemented only in areas where there is a shortage of available land and the cost of housing, relative to construction costs, is relatively high.

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33 While there is no perfect measure of land value, many economists suggest that it is the difference between the cost of the structure and the market price. This idea is supported by some of Edward Glaeser and Joseph Gyourko’s research. For more, see Edward Glaeser and Joseph Gyourko, “The Impact of Zoning on Housing Affordability,” *The National Bureau of Economic Research, Working Paper 8835*, 2002, pp. 10-13.

Figure 4: Determinants of Housing Demand

City Economic Profile:
- Unemployment rate
- Crime
- Poverty rate
- % Owner occupied
- Weather
- Vacancy rate

Population -> Demand

City amenities:
- Schools
- Parks & green space
- Transit options
- Food

Figure 5: Determinants of Housing Supply

Construction Costs -> Supply

Land Value <-> Zoning

Demand
Data and Variables

This study uses data from three sources. My primary dataset consists of inclusionary zoning structure information from the California Coalition for Rural Housing (CCRH). This is not a time series dataset, but rather a snapshot of what inclusionary policy looked like in California at one point in time. The data is based on two surveys undertaken in 2006. The initial survey was sent to every city and county in California, and provides information on the presence and structure of inclusionary

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programs. The second survey was sent to the 149 jurisdictions that reported the presence of inclusionary programs, and provides details on the number of affordable units produced and their affordability levels.

My primary dependent variable, the total estimated number of affordable units produced under the inclusionary program, comes from CCRH. It is a continuous variable referring to the sum of affordable inclusionary development units and in-lieu fee units produced between 1999 and 2006. It ranges from 0 to 1,504 units. My primary independent variables of interest also come from CCRH, and measures three policy characteristics: (1) The number of years since program adoption (a continuous variable ranging from 0 to 33); (2) the number of alternatives to new construction (a continuous variable reporting the number of alternatives that developers have to the construction of inclusionary units, i.e., credit transfers, land dedication, off-site construction, in-lieu fees, and the conversion of market housing to affordable housing); and (3) the number of developer incentives (a continuous variable reporting the number of incentives offered to developers to promote the construction of affordable units, i.e., option to delay the construction of affordable units, clustering of inclusionary units, density bonuses, subsidies, fee reductions, fee deferrals, fee waivers, tax abatement, fast track processing and relaxed design standards).

Other relevant structure variables include a binary indicator variable for whether the program is voluntary or mandatory, trigger size (a continuous measure of the minimum project size required to comply with inclusionary policies, ranging from 0 to 10 units), and the length of affordability (the length of time that units must remain

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36 Inclusionary housing policies may be implemented at the municipal and county-level.
affordable, a continuous variable ranging from 5 to 55 years). I also use CCRH’s estimates of the overall level of residential construction between 1999 and 2006.

This study also relies on demographic information obtained from the 2010 U.S. Census at the place-level.\textsuperscript{37} This includes controls for population size, population density, median household income, and racial and ethnic composition. My dataset also includes important controls for the composition of the housing market. These include the number of vacant units and average household size.\textsuperscript{38}

**Methodological Approach**

My hypothesis is that more flexible inclusionary programs produce more affordable units. To test this theory, I will conduct a multivariate statistical analysis using an ordinary least squares (OLS) regression model weighted by population.

As discussed above, my dependent variable will be *UNITS*, which is the total number of affordable units produced through inclusionary programs between 1999 and 2006. I have three types of independent variables. First, my model will include a vector of variables for policy structure (*STRUCTURE [3]*)\textsuperscript{3}, which includes the number of developer incentives, the number of alternatives to construction, and the number of years since program adoption. Second, my model includes a vector of variables for the strength and composition of the housing market (*MARKET [2]*)\textsuperscript{2}, which will consist of the number

\textsuperscript{37} An “incorporated place” is a statistical designation created by the U.S. Census Bureau, which is used to refer to a city, town, village or borough. The complete definition for the term can be reviewed on the U.S. Census’s website, accessed at: \url{https://www.census.gov/geo/reference/gtc/gtc_place.html}.

\textsuperscript{38} Demographic data was obtained from two sources: 1) The U.S. Census Bureau, Population total, population density, income, household size, number of vacant housing units, (2010), Prepared by Social Explorer. Available from: \url{http://www.socialexplorer.com/}. 2) The U.S. Census Bureau, Race and ethnicity (2010), Prepared by National Historic Geographic Information System. Available from: \url{https://www.nhgis.org/}. 21
of vacant housing units in 20010 and the total number of building permits issued between 1999 and 2006. Finally, I include a vector of variables for demographic controls (DEMO [3]), which includes a control for race and ethnicity, population density and median household income. My equation will be as follows:

\[ UNITS = B_0 + B_1 STRUCTURE_i + B_2 MARKET_i + B_3 DEMO_i + u_i \]

**Description of Data**

My model includes data from the 92 cities and counties in California that responded to both surveys. Cities adopted their programs between 1973 and 2005, but the mean year of program adoption is 1995. Overwhelmingly, most policies require mandatory compliance (94%), and are clustered along the coast as demonstrated in the figure below.

**Figure 7: Geographic distribution of sample data across the state of California.**

Programs also offer up to six different incentives to developers and five different alternatives to development, but on average jurisdictions offer about two of each. Policies also vary across different measures of affordability length, depth of affordability and the triggering size. Each of these measures can be written to be more or less burdensome for developers. The average triggering threshold for renter and owned housing is about 6 units (6.2 and 5.5
respectively). Affordability is a requirement for 13% of both rental and owner-occupied housing. With regard to the length of affordability, rental housing requires a minimum of about 46 years on average, while owner-occupied housing requires slightly less (about 40 years).

**Table 1: Sample Policy Structure Descriptive Statistics in 2006**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year Adopted</td>
<td>93</td>
<td>1995.87</td>
<td>8.04</td>
<td>1973</td>
<td>2005</td>
</tr>
<tr>
<td><strong>Affordability Level and Length</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Threshold (Rental)</td>
<td>93</td>
<td>6.25</td>
<td>6.70</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>Minimum Percent Affordable (Rental)</td>
<td>77</td>
<td>13.27</td>
<td>5.10</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Minimum Years Affordable (Rental)</td>
<td>93</td>
<td>45.76</td>
<td>24.37</td>
<td>5</td>
<td>99</td>
</tr>
<tr>
<td>Unit Threshold (Owned)</td>
<td>93</td>
<td>5.51</td>
<td>4.88</td>
<td>0</td>
<td>30</td>
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<tr>
<td>Minimum Percent Affordable (Owned)</td>
<td>72</td>
<td>13.47</td>
<td>4.88</td>
<td>4.5</td>
<td>25</td>
</tr>
<tr>
<td>Minimum Years Affordable (Owned)</td>
<td>93</td>
<td>40.67</td>
<td>20.54</td>
<td>5</td>
<td>99</td>
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<tr>
<td><strong>Program Flexibility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voluntary</td>
<td>93</td>
<td>0.11</td>
<td>0.32</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Number of Developer Incentives</td>
<td>93</td>
<td>2.25</td>
<td>2.01</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Number of Alternatives</td>
<td>93</td>
<td>2.57</td>
<td>1.44</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>
My data also encompasses a diverse range of demographic indicators. The average population in my sample is small, 111,069 people, but ranges as high as 1,418,788 people in Sacramento County. The average household size is 2.7 people per household, and the average median household income is $72,435 per year. About 54% of my sample is white and 46% is non-white. Among the larger non-white races represented, 12% is Asian and nearly 3% is black. About 28% of my sample identifies as Hispanic only. Table 2 summarizes the demographics my sample.

Table 2: Sample Demographics in 2010

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>93</td>
<td>111068.7</td>
<td>216714</td>
<td>1862</td>
<td>1418788</td>
</tr>
<tr>
<td>Population Density</td>
<td>93</td>
<td>4205.70</td>
<td>2899.74</td>
<td>4.7</td>
<td>18225.6</td>
</tr>
<tr>
<td>Household Size</td>
<td>93</td>
<td>2.73</td>
<td>0.44</td>
<td>1.52</td>
<td>4.27</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>93</td>
<td>72435.39</td>
<td>19703.32</td>
<td>34570</td>
<td>129515</td>
</tr>
<tr>
<td>Percent Non-White</td>
<td>93</td>
<td>46.44</td>
<td>20.03</td>
<td>8.64</td>
<td>86.72</td>
</tr>
</tbody>
</table>

Finally, my data includes a variety of different housing markets. For example, the number of vacant housing units varies considerably by county, as seen in Figure 8.

39 I define “non-white” as the total population that is not Hispanic or Latino, black or African American, American Indian, Alaska Native, Asian or Native Hawaiian or Pacific Islander.
40 For the demographics of the entire state of California, see Appendix A.
Residential construction levels also vary across counties. The number of total residential building permits issued (under inclusionary housing programs and otherwise) between 1999 and 2006 ranges from 39 to 39,513 permits per jurisdiction. The average number of permits is about 3,377. The number of inclusionary units produced over the same period ranges from 0 to 1,504 units, with an average of 238 units. These statistics are summarized below in Table 3.
Table 3: Sample Market Strength in 2010

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affordable Production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Inclusionary Units</td>
<td>93</td>
<td>238.39</td>
<td>369.95</td>
<td>0</td>
<td>1504</td>
</tr>
<tr>
<td>Market Strength</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Building Permits</td>
<td>94</td>
<td>3377.36</td>
<td>6274.63</td>
<td>39</td>
<td>39513</td>
</tr>
<tr>
<td>Vacant Housing Units</td>
<td>93</td>
<td>3141.34</td>
<td>6554.78</td>
<td>64</td>
<td>41987</td>
</tr>
</tbody>
</table>

Per my conceptual model, I would expect jurisdictions with larger and denser populations, and higher overall levels of residential construction, to produce more inclusionary units. However, Figure 9 demonstrates that this is not always the case. There must be other factors that contribute to the success of an inclusionary program.
The Relationship between Geography, Population and the Production of Affordable Housing:

The most populous jurisdictions don’t always have inclusionary programs that produce the most affordable housing.

Instead, the most successful programs seem to be clustered around the Bay Area.

Source: California Coalition for Rural Housing and The United States Census Bureau
Results

I. Regression Results

Table 4 at the end of the chapter summarizes the results of my regression analysis for two different models. Both models are similar, and differ only in that Model 2 includes an interaction term for percent non-white and median income. While percent non-white is significant in Model 1, it ceases to be significant when the interaction term is included in Model 2. Percent non-white, median income and the interaction term are all included in Model 2 because they are jointly significant at the 90% level.

Both Models 1 and 2 are highly significant and control for about 85% of the variation in my sample (R-squared = 0.8524). Below, I summarize the findings of my analysis with regards to policy structure, the strength of the housing market and demographics.

Policy Structure

My analysis reveals some interesting results with regard to program structure. My policy variables are all significant at the 95% or 99% level. In Model 2, an additional year of program age is expected to increase the number of affordable units by about 13 units over a period of seven years, controlling for the other policy variables, housing market strength and demographics. This is consistent with the literature, and makes sense because I would expect older programs to be more familiar to developers, reducing the burden of compliance.  

The number of developer incentives also produces a statistically significant (p<0.01) and positive effect on the number of inclusionary units produced. In Model 2, an

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41 See Schuetz et al. 2007 pp. 62. Also see The Urban Institute’s 2012 report citing program age and predictability as a key component to program success.
additional developer incentive is associated with the creation of about 67 additional affordable units over a seven-year period, controlling for the other policy variables, housing market strength and demographics. This result is consistent with my hypothesis, and supports the theory that greater flexibility in inclusionary programs supports greater program success.

The number of alternatives to construction is also statistically significant (p<0.05), and has a negative effect. In Model 2, the presence of an additional alternative to construction is associated with the construction of about 50 fewer affordable units over a seven-year period, controlling for the other policy variables, housing market strength and demographics. This is slightly surprising, as my hypothesis predicted that all measures of program flexibility would have been equally successful at producing additional affordable units. However it appears that when jurisdictions offer more alternatives to the construction of affordable units on-site (such as the payment of an in-lieu fee or the conversion of existing market rate housing to affordable housing off-site), fewer overall affordable units are produced under the program.

Individual measures of program flexibility, such as the policy trigger threshold or the minimum number of years of required affordability, were not statistically significant. Voluntary compliance was also not statistically significant, but there may not have been enough variation in my dataset for this finding to be compelling. About 11% of the jurisdictions responding to the first survey had voluntary compliance. However of those jurisdictions who responded to both surveys, the proportion with voluntary compliance fell to only 6%. In practice, the distinction between voluntary and mandatory compliance may be inconsequential. So-called mandatory programs with a high degree of flexibility
across a number of other measures may be just as flexible in practice as their voluntary counterparts.

**Housing Market Strength**

My results also suggest that a number of housing market characteristics are also strong predictors of the success of an inclusionary policy. First, the total level of residential construction was positively associated with higher levels of affordable housing production, significant at the 99% level in Models 1 and 2. In both models, 100 additional residential construction permits is associated with the construction of about 6 (5.6) additional affordable units over a seven-year period, controlling for all three policy variables, housing market strength and demographics. This finding is consistent with the literature that suggests that inclusionary zoning works better in stronger housing markets. That is, the burden of inclusionary requirements may be relatively low in markets that enjoy strong housing demand.

The number of vacant housing units is also highly significant (p<0.01) and negative. A 100 unit increase in the number of vacant housing units is associated with an almost 3 (2.6) unit decrease in the number of affordable units produced over a seven-year period, controlling for policy structure, total construction and demographics. This result is intuitive, as I would expect vacant housing units to be a measure of weaker housing markets, having a negative effect on the number of inclusionary units produced.

**Demographics**

Finally, my results do not support the importance of demographic factors. The only statistically significant demographic variable is population density, significant at the 99% level across both models. According to both Models 1 and 2, an additional 100 people per square mile is associated with the construction of an additional 4 affordable
units over a seven-year period, controlling for policy structure, housing market strength and demographics. While I have categorized this control as a demographic variable, it may more accurately characterize housing markets. The finding that denser jurisdictions are associated with more successful inclusionary programs is consistent with the theory that certain markets are better equipped to support the production of inclusionary units by cross-subsidizing them: that is, the affordable units are paid for through the sale of market rate units at a higher price. This is more easily accomplished in dense urban cities that are characterized by an abundance of multifamily housing than in more suburban jurisdictions where single-family housing is more dominant.

None of my other demographic controls are statistically significant. Percent non-white appears to be statistically significant in Model 1, but is insignificant after it is interacted with median income in Model 2. However, the combination of percent non-white, income and the interaction term are jointly (though weakly) significant at the 90% level, so I have left them in my final model. Median income is also insignificant across both models. This is a fairly surprising result. My conceptual model predicts that wealthier areas have a higher demand for housing. However, both Models 1 and 2 suggest that it has no effect. There are two potential reasons for this. First it is possible that income matters, but only at the neighborhood-level. For example, more affordable housing may be built in mid-priced neighborhoods in Los Angeles than in the city’s lower-income areas. However, when this information is aggregated up to the city-level, the city’s median household income doesn’t matter very much. Second, construction

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43 “Creating Affordable Housing Out of Thin Air: The Economics of Mandatory Inclusionary Zoning in New York City,” The Furman Center, March 2015.
levels and prices in California over the period of my analysis (leading into the housing market collapse in 2006-2007) were exceedingly high. It is possible that the housing market over this period was less sensitive to changes in market wealth than would otherwise be expected. Table 4 summarizes all of my regression results.
Table 4: Regression Results

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy Structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years Since Program Adoption</td>
<td>12.94***</td>
<td>13.17***</td>
</tr>
<tr>
<td></td>
<td>3.08</td>
<td>3.15</td>
</tr>
<tr>
<td>Number of Developer Incentives</td>
<td>65.52***</td>
<td>67.10***</td>
</tr>
<tr>
<td></td>
<td>13.38</td>
<td>13.96</td>
</tr>
<tr>
<td>Number of Alternatives to Construction</td>
<td>-49.23**</td>
<td>-50.27**</td>
</tr>
<tr>
<td></td>
<td>20.26</td>
<td>20.51</td>
</tr>
<tr>
<td>Housing Market Strength</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Construction</td>
<td>0.0558***</td>
<td>0.0560***</td>
</tr>
<tr>
<td></td>
<td>0.00306</td>
<td>0.00312</td>
</tr>
<tr>
<td>Vacant Housing Units</td>
<td>-0.0255***</td>
<td>-0.0257***</td>
</tr>
<tr>
<td></td>
<td>0.00256</td>
<td>0.00259</td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Density</td>
<td>0.0406***</td>
<td>0.0407***</td>
</tr>
<tr>
<td></td>
<td>0.00602</td>
<td>0.00606</td>
</tr>
<tr>
<td>Median Income</td>
<td>-0.00186</td>
<td>-0.00345</td>
</tr>
<tr>
<td></td>
<td>0.00162</td>
<td>0.00411</td>
</tr>
<tr>
<td>Pct Non-White</td>
<td>-483.5***</td>
<td>-727.9</td>
</tr>
<tr>
<td></td>
<td>160.9</td>
<td>602.4</td>
</tr>
<tr>
<td>Pct Non-White * Income</td>
<td>0.00346</td>
<td>0.00823</td>
</tr>
<tr>
<td>Constant</td>
<td>194.4</td>
<td>305.6</td>
</tr>
<tr>
<td></td>
<td>176.2</td>
<td>318</td>
</tr>
<tr>
<td>$R^2$</td>
<td>92</td>
<td>92</td>
</tr>
<tr>
<td>$N$</td>
<td>0.852</td>
<td>0.852</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

44 Regression analysis conducted using STATA.
II. Robustness

I have conducted four robustness checks on my model. First, I have tested the sensitivity of my model to changes in the covariates. As demonstrated in Model 3 in Appendix B, removing all of my demographic controls has no impact on the sign or significance of nearly all of my remaining variables. The magnitude of the coefficients changes only slightly. The only variable affected is alternatives to construction, which is no longer significant. Removing my controls for housing market strength has a much larger effect on the model, as seen in Model 4 in Appendix B. The overall model significance falls slightly but the r-squared value drops dramatically, from 0.85 to 0.25. While program age remains significant, the number of developer incentives is no longer significant, and the number of alternatives to construction is significant but with a positive sign.

However market strength is important, and a model specified without these controls is an inferior model. This is evidenced by Model 5 in the appendix, where I remove the policy variables. The r-squared remains high (0.79) and the sign, significance and magnitude of the other variables changes very little from my final model (Model 2). Model 5 suggests that, while program age and structure matter, housing market strength may be one of the most important predictors of program success.

Second, I utilized the Ramsey RESET Test to test whether I have the correct functional form for my model. I failed to reject the null hypothesis, and conclude that my model is correctly specified. I also experimented with logging a number of the variables in my model. While Schuetz et al. log some of the variables in their model, doing this reduces the r-squared value of my model as well as the significance of the alternatives
policy structure variable. The results of my regressions with logged variables can be seen in Appendix C.

Finally, I have also tested my model for heteroskedasticity and multicollinearity. I tested for heteroskedasticity using the Breusch-Pagan / Cook-Weisberg test for heteroskedasticity. My result is not significant, allowing me to use Huber-White Heteroskedastic Standard Errors. I also tested for multicollinearity using the variation inflation factor in Stata, concluding that none of the variables in my model are redundant.

**Research Limitations and Policy Implications**

I. Limitations

These findings above should be interpreted cautiously due to a number of limitations associated with the CCRH data and with my model. First my sample size is very small, containing only 92 observations. This constrains the power of my overall model, limiting the number of regressors I could use and increasing my standard errors, as well as increasing the chance of rejecting a false null hypothesis (i.e. getting a false positive). Missing data on a number of indicators of program flexibility, such as affordability levels and trigger thresholds, also stymied efforts to examine the individual effects of these policy variables.

Second, data from CCRH was also self-reported, and therefore runs the risk of measurement bias due to human error. To the degree that my data suffers from measurement bias, I would expect that some estimates (like the number of affordable units produced) might be biased upwards. That is to say, I would suspect that jurisdictions might feel pressured to report that their programs are more successful than they actually are. That said, the data that I received from CCRH didn’t include numbers
that appeared to have been rounded (either to the nearest 5 or 0) for this variable, which would indicate that this is not an important concern.

Third, a number of programs may appear less successful than they actually are. A total of 48 jurisdictions implemented their programs after 1999. Since jurisdictions were asked to report the total number of affordable units produced between 1999 and 2006, jurisdictions implementing housing after 1999 will have produced fewer units because they were reporting their production over a shorter time period. My analysis does include a control for program age, but ideally this type of analysis would have been performed on time series data, where I would have been able to lag the year of program adoption to allow jurisdictions and developers to adapt to the passage of new regulations.

Fourth, my model may suffer from omitted variable bias. While I was able to control for a number of housing market, policy structure and demographic factors, I was not able to control for administrative capacity or technical expertise on the part of the implementing jurisdictions. Potential measures might be size of a department’s budget, or the length of time it takes to apply and get approved for an inclusionary permit. It is conceivable that a more robust or adept jurisdiction would have programs that produce more affordable units. However, it is not clear how these more adept jurisdictions would structure their policies. That is, whether they would tend towards structuring flexible programs or not. Thus, it is not clear which way the bias would go.

Finally, OLS assumes that observations are a random sample from the population. Yet, the data used in this analysis was obtained from a sample of jurisdictions who responded to both the first and second surveys. It is possible that only the jurisdictions with greater administrative capacity took the time to respond to both surveys. Or perhaps
only the jurisdictions with the most successful programs responded. In either scenario, my sample would no longer resemble a random sample of the population and would cease to be internally valid. Even if the sample is random, it may not be externally valid. California’s housing market is characterized by a historically strong construction sector. It might not be appropriate to generalize these findings to areas of the country that do not share these characteristics, such as Detroit or Flint.

II. Implications

Despite some of the limitations to this study, the analysis still yields a number of important implications for policymakers considering or already implementing inclusionary housing policies. First, certain aspects of program flexibility may produce more affordable housing units than others. For example, more developer incentives (like density bonuses) seem to support program success. Conversely, other measures of program flexibility seem to have very little effect, and providing developers with more alternatives to construction actually reduces the number of affordable units produced.

The findings also support a body of research suggesting that inclusionary programs do better in stronger housing markets with robust demand for residential construction. Inclusionary housing may be an effective and low-cost tool for creating affordable housing in competitive housing markets, such as Miami or New York, but less effective in depressed markets, such as Detroit or Flint.

Conclusions

The analysis of California’s inclusionary programs provides some evidence to suggest that more flexible programs are more successful at producing affordable housing.
However, a number of questions surrounding best practices remain. The data on this subject remains highly fractured and is increasingly outdated. A critical next step for any future research in this area is the creation of a national database of inclusionary housing programs. A large and comprehensive dataset would confirm the findings of this paper and lead to a greater overall understanding of inclusionary housing programs and the environments to which they are best suited. Relevant questions include:

1) *Does program flexibility matter outside of California?* For example, what is the impact of a very strict program, like mandatory inclusionary housing, in a robust housing market like New York? As previously mentioned, New York City recently passed a new mandatory inclusionary program. While New York City has had forms of inclusionary policies in the past, the new program represents a shift to a far stricter and more comprehensive program. For someone who is so inclined, it could make a terrific candidate for a difference in difference study, using a similar housing market with a less robust inclusionary program as a control.

2) *How does program success vary at the neighborhood level?* Due to data limitations, my observations are at the city and county level. However housing markets vary considerably within cities, and a lot of that detail is lost in my analysis. For example, my study did not find that median income had a significant effect. Yet is possible that more precise measures accounting for city, suburb and rural variation would better capture the effect of higher and lower cost neighborhoods. More research needs to be done into which neighborhoods host inclusionary units, and the degree to which construction is associated with socioeconomic and demographic factors. The results of

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45 For more on New York City’s existing inclusionary programs, visit the city’s website at: http://www1.nyc.gov/site/planning/zoning/districts-tools/inclusionary-housing.page.
such a study would help cities beginning to implement inclusionary policies target those neighborhoods where the policy has the greatest chance of success.

3) Do individual alternatives to construction have different effects? While my analysis aggregated all of these policies together into a single measure, intuitively some might have different effects. For example, the conversion of existing market rate housing into affordable housing should still have a positive effect on the number of affordable units produced. Are developers not using this option? Or is the net effect canceled out by some of the other alternatives, such as in-lieu fees? A more thorough evaluation of these different policy levers would build on the findings of this study, providing jurisdictions with more information about the best way to structure these programs.

Inclusionary housing programs remain a promising and important tool. However, a deeper understanding is needed so that cities can begin to build and preserve the next generation of affordable housing.
Appendix

Figure 10: California Demographics

CALIFORNIA DEMOGRAPHICS:
Variation across counties by age, race, rent and income. Northern California is characterized by a population that is older and predominantly white. Housing tends to be most expensive along the coast, where incomes are highest.

Source: 2013 American Community Survey
**Table 5: Model Sensitivity to Changes in the Covariates**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy Structure</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years Since Program Adoption</td>
<td>15.33***</td>
<td>20.67***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.703</td>
<td>6.656</td>
<td></td>
</tr>
<tr>
<td>Number of Developer Incentives</td>
<td>41.78***</td>
<td>-20.79</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15.73</td>
<td>26.96</td>
<td></td>
</tr>
<tr>
<td>Number of Alternatives to Construction</td>
<td>-38.25</td>
<td>116.3***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24.68</td>
<td>38.39</td>
<td></td>
</tr>
<tr>
<td><strong>Housing Market Strength</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Construction</td>
<td>0.0512***</td>
<td>0.0533***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.00347</td>
<td>0.00332</td>
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</tr>
<tr>
<td>Vacant Housing Units</td>
<td>-0.0217***</td>
<td>-0.0289***</td>
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</tr>
<tr>
<td></td>
<td>0.00281</td>
<td>0.00296</td>
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</tr>
<tr>
<td><strong>Demographics</strong></td>
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<td></td>
</tr>
<tr>
<td>Population Density</td>
<td>0.0178</td>
<td>0.0369***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.013</td>
<td>0.00673</td>
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</tr>
<tr>
<td>Median Income</td>
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</tr>
<tr>
<td></td>
<td>0.00875</td>
<td>0.00464</td>
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</tr>
<tr>
<td>Pct Non-White</td>
<td>2,025</td>
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</tr>
<tr>
<td></td>
<td>1,276</td>
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<tr>
<td>Pct Non-White * Income</td>
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<tr>
<td></td>
<td>0.0179</td>
<td>0.00924</td>
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</tr>
<tr>
<td>Constant</td>
<td>-0.884</td>
<td>-998.7</td>
<td>46.58</td>
</tr>
<tr>
<td></td>
<td>93.89</td>
<td>650.1</td>
<td>362.1</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.777</td>
<td>0.245</td>
<td>0.789</td>
</tr>
<tr>
<td>$N$</td>
<td>92</td>
<td>93</td>
<td>92</td>
</tr>
</tbody>
</table>

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Table 6: Model Sensitivity to Changes in Functional Form

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Model 6</th>
<th>Model 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy Structure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years Since Program Adoption</td>
<td>0.133***</td>
<td>0.177***</td>
</tr>
<tr>
<td></td>
<td>0.0201</td>
<td>0.0257</td>
</tr>
<tr>
<td>Number of Developer Incentives</td>
<td>0.421***</td>
<td>0.365***</td>
</tr>
<tr>
<td></td>
<td>0.0894</td>
<td>0.107</td>
</tr>
<tr>
<td>Number of Alternatives to Construction</td>
<td>-0.321**</td>
<td>-0.127</td>
</tr>
<tr>
<td></td>
<td>0.131</td>
<td>0.158</td>
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<tr>
<td><strong>Housing Market Strength</strong></td>
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<td>Total Construction</td>
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<tr>
<td>Log of Total Construction</td>
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<td>Vacant Housing Units</td>
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<td>$N$</td>
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<td>0.638</td>
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Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Bibliography


“Creating Affordable Housing Out of Thin Air: The Economics of Mandatory Inclusionary Zoning in New York City.” The Furman Center. March 2015.


