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Rent Control and its Effect on the Availability of Rental Units

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Rent Control and its Effect on the Availability of Rental Units

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Abstract

This paper uses the introduction of municipal rent control legislation in East Palo Alto, California in 2010 to estimate the effects of rent control. I examine housing data from the American Community Survey (years 2000 and 2006) and the American Community Survey 'Place' Data Profiles (years 2010-2019) to determine how city-level rent control regulation impacted the local housing market, specifically in terms of the availability of rental units. My results suggest that rent control legislation had no statistically significant effect on the availability of rental units, which I approximate with the proportion of total housing units occupied by renters. However, further investigation indicates this legislation did little to mitigate the increase of median rental prices in comparison to the rates of Fairfield (control group) or California. These findings suggest further research is needed to fully understand the efficacy and impact of rent control legislation in East Palo Alto.

1. Introduction

Rent control is introduced to economics students as a strict price ceiling and an unambiguous source of inefficiencies. Traditional rent control legislation prohibits rental prices from rising above a politically determined level. This directly translates into fewer units being supplied than demanded, creating a housing shortage and a deadweight loss. Alston, Kearn, and Vaughan (1992) asked American economists to evaluate this statement: "A ceiling on rents reduces the quantity and quality of housing available." The results were:

Generally agree: 76.3%
Agree with provisions: 16.6%
Generally disagree: 6.5%

These results demonstrate that the vast majority of American economists concur that rent control decreases both the quantity and quality of housing stock. However, these conclusions are largely

based on theoretical assumptions rather than econometric models or empirical evidence. Since the latter decades of the 20th century, rent control legislation has evolved from simpler antecedents into highly complex and intricate systems (Jenkins, 2009). With the developments and improvements in the nuance of regulations, is it necessarily the case that implementing rent control will unequivocally create inefficiencies in the rental market and decrease the supply of rental units?

In 2010, East Palo Alto (abbreviated E.P.A) introduced the *Rent Stabilization and Just Cause for Eviction Ordinance*, which outlined the specific circumstances in which a landlord may evict a tenant and appointed a *Rent Stabilization Board* to determine the maximum yearly permissible increase as a percentage of rent (Rent Stabilization Board Regulations for Residential Tenancies in the City of East Palo Alto, 2010).¹ This externally imposed municipal rent control ordinance creates a natural quasi-experiment. Standard econometric practice for natural experiments suggests utilizing difference-in-differences regression models to isolate the impact of a treatment (rent control legislation) without interference from confounding influences or variables.² Using housing characteristics data from the American Community Survey I plan to construct a model that allows me to isolate the effect of rent control legislation on the housing market of East Palo Alto specifically to determine if and/or how the ordinance impacted the supplied stock of local rental housing units.

I expect an analysis of this data will contradict traditional economic theory, and the rent control legislation introduced in East Palo Alto will not negatively affect the local rental market by decreasing the availability of rental units. I hypothesize East Palo Alto will not suffer the widely predicted adverse ramifications of rent control ordinances because of the characteristics

¹ The Rent Stabilization Board is appointed by the East Palo Alto city council, and thus is indirectly related to election results.

² As taught by Professor Chaisemartin in Economics 140B.

of the city. I expect the more nuanced and complex nature of modern rent control legislation in combination with the constant influx of new high-income tenants prevalent in Silicon Valley will result in rental units still being profitable to landlords, and thus remaining on the rental market. After completing the model and analyzing the data, I found no evidence that the rent control ordinance of E.P.A. had any impact on the availability of rental units as approximated by the proportion of total housing units occupied by renters. However, further study of the median rental rate of E.P.A. as compared to the control group and the California average shows the rent control legislation did little to reduce or alleviate broader trends of rising rents.

2. Literature Review

2.1 Rent Control Theories

The loose term of ‘rent control’ generally refers to a wide spectrum of regulations which includes price controls, eviction controls, obligations of minimum levels of maintenance on a property, and a system of oversight and enforcement to ensure continued adherence to laws. Rent control is often used colloquially to reference the price controls which place legal limits on the amount of rent a landlord can charge a tenant while eviction controls codify the circumstances in which a landlord may justly and legally evict a tenant. *Tenants Together*, a statewide coalition of California tenant organizations, claims:

Rent control is effective at keeping people in their homes. Rent control policies limit rent increases and provide greater housing stability for tenants... Rent control is often combined with eviction protections, known as ‘just cause of eviction,’ to make sure that landlords do not get around the rent increase limits by simply evicting tenants arbitrarily

and bringing in new tenants. Just Cause protections provide basic fairness and prevent retaliation, discrimination, and harassment proactively.³

Though opinions about the efficacy and fairness of price and eviction controls vary, as of 2018, 182 municipalities across the United States have rent control (Rajasekaran, 2019).

The specifics of price controls have evolved in complexity over time. *First generation* rent control, otherwise known as a price ceiling or rent freeze, describes a situation in which no increases in rent are allowed and the rent is typically kept at the rate of when the legislation was enacted. There is a clear consensus among economists that first generation rent control legislation have unequivocally negative consequences, and that the “cumulative evidence -- both quantitative and qualitative -- strongly supports the predictions of the textbook model [of rent freezes] in virtually all respects” (Arnott, 1997, 7-8). First generation rent control was only introduced during times of great economic and political turmoil, such as World War II, and the unambiguously detrimental ramifications mean rent freezes are no longer a viable regulatory mechanism. Another form of price control is *vacancy control*, also known as strict or strong rent control, which only allows for controlled increases in rental rates and continues regulations across tenancies. This translates into new tenants paying nearly identical rents to previous leases and the rental rate is maintained at an artificially low level regardless of tenant turnover.

The most modern and complex form of price control is known as *Second Generation* rent control or *vacancy decontrol*. These policies limit the increase of rent during tenancies but allow rents to increase to market rates between new leases. This creates circumstances where tenants under established leases pay artificially low rents while new tenants pay market rates. An independent organization is often charged with determining permissible yearly increases in rent,

³ Of course Tenants Together cannot be considered an empirical, unbiased, or peer-reviewed source by any metric. However it is useful to have an idyllic interpretation of rent control from the most hopeful sources as a form of comparison.

as a percentage of the total rent, in relation to any increases in inflation. The nature of second generation rent control allows existing leases to increase marginally with the cost of living and new leases to match market rates, meaning the legislation does not match the typical model of a price ceiling.⁴ This suggests the results and implications of second generation rent control are more ambiguous and could promote stability for those in controlled units rather than necessarily decreasing the supply or quality of housing units.

2.2 *The History of Rent Control*

The United States first implemented rent control legislation during World War II, when many soldiers and their families were uprooted and moved across the country, disrupting stable housing markets in many major cities (Jenkins, 2009, p. 74).⁵ The U.S. Emergency Price Act of 1942 established rent control for New York City by freezing all rents to their March 1943 levels to counteract any “speculative, unwarranted, and abnormal” rent increases to “ensure affordable housing and prevent profiteering” (Arnott, 1995, p. 100). The high inflation of the 1960s and 70s translated into rental rates rising rapidly. Tenants organized protests and assemblies which created a second wave of rent control legislation across the country, though mostly focused in large cities such as Washington D.C., Seattle, New York City, and Baltimore (Jenkins, 2009, p. 74).

Rent control legislation was first introduced in the Bay Area in 1979 when San Jose implemented price controls and San Francisco adopted both rent control and eviction protections. Berkeley followed suit in 1980. The city of Hayward originally adopted both rent and eviction protections in 1983. In response to this wave of tenant protections and a corresponding rise in landlord discontent, California passed the Costa-Hawkins Rental Housing Act in 1995. This bill

⁴ And therefore will not automatically create inefficiencies in the housing market.

⁵ The majority of this migration was from rural and suburban areas into highly populated cities with proximity to military bases or areas of military interest.

prohibited vacancy control legislation (where rental prices continue to be moderated and controlled between tenancies) and outlined certain categories of dwellings exempt from any price controls (such as new construction, single-family units, and condos). The act was intended to compromise between tenants, landlords, and developers by promoting safe and affordable housing while simultaneously encouraging the construction of new housing and ensuring landlords could maintain their profit margins. Today eleven out of the 101 municipalities in the nine counties of the Bay Area have rent control and/or just cause protections in place. Since this legislation is more common in large cities, the eleven cities translate into roughly 38% of the 7.1 million people living in the Bay Area reside in a city with price or eviction controls codified in law.⁶

2.3 *East Palo Alto*

East Palo Alto is a city on the Peninsula in San Mateo County of the Bay Area. In 2010, East Palo Alto passed the *Rent Stabilization and Just Cause for Eviction Ordinance* with 79% of voters supporting the bill (City of East Palo Alto). The ordinance incorporated both price and eviction controls into a comprehensive attempt to protect residents from rent increases which have displaced low-income and minority residents out of the Bay Area for the past several decades. In adherence to the Costa-Hawkins Act, certain dwellings are exempt from any of these rental restrictions including single-family detached dwellings, condominium units, and any new construction (which E.P.A. defines as housing built after 1988). The ordinance also created a Rent Stabilization Board, populated with officials appointed by the city council, who determine permissible yearly rent increases as a percentage of the total rent. Rent increases cannot legally

⁶ It is important to note that while 38% of the Bay Area population lives in cities with rent control protections, they do not all experience the benefits personally. Living in San Francisco does not guarantee that one occupies a rent controlled unit.

exceed 10%. Since 2011, the Rent Stabilization Board has allowed an average of 2.3% yearly increases in rent (City of East Palo Alto's *Guide to Rent Control*).

2.4 Relevant Literature

David P. Sims of Brigham Young University published his study entitled "Out of control: What can we learn from the end of Massachusetts rent control?" in 2007 which created a precedent for my experimental design. Sims used the end of rent control in Massachusetts in 1995 to estimate the impact of the legislation on the quantity, price, quality of available rental housing, and renter tenure (2007, p. 136). He utilized a difference-in-differences regression

Figure 1 provides the location of East Palo Alto. *Source:* Google Maps.

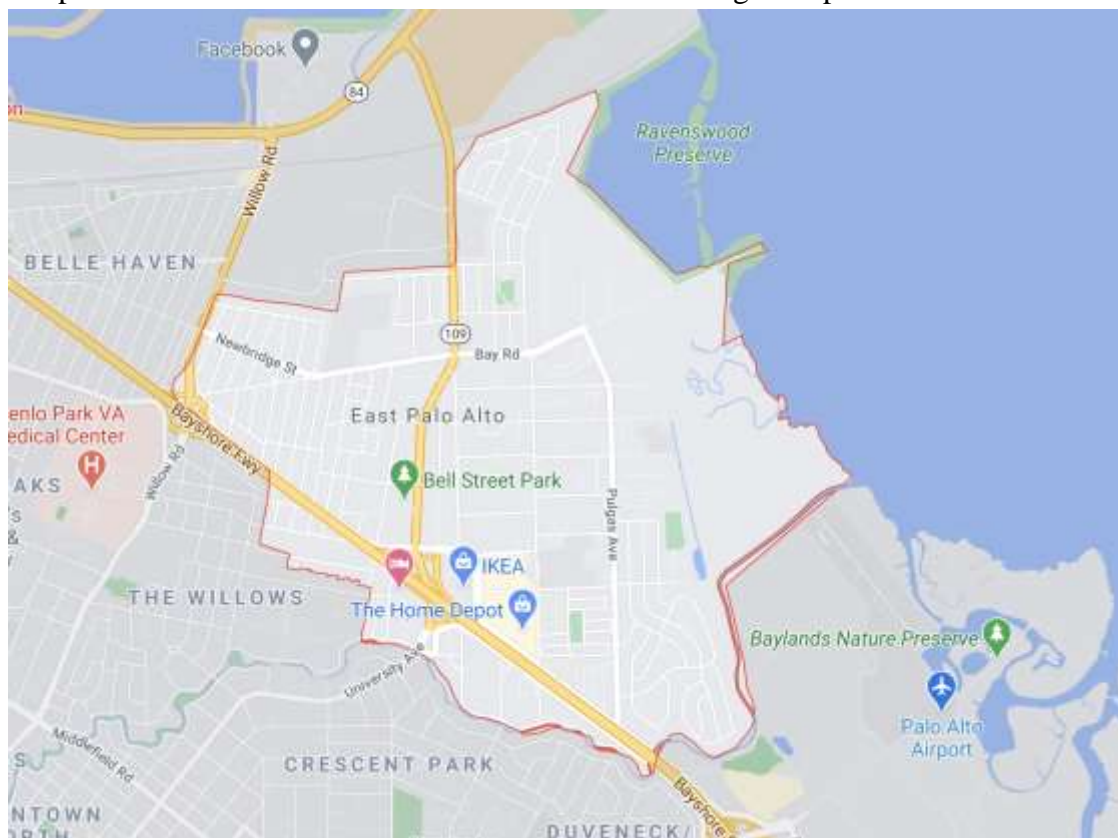


Fig. 1. East Palo Alto Location

model to estimate the effect of decontrolling a zone of Boston on the rents of units in that zone.

Sims recognizes the primary obstacle of identifying the effect of rent control on rental rates is the

prospect of omitted variable bias and uses an instrumental variable strategy to mitigate the possibility of the treatment status being correlated with unobserved unit characteristics (2007, p. 138).

The available literature of an econometric analysis of rent control legislation focuses primarily on the sudden end of the presence of rent control ordinances. This provides an opportunity for me to analyze the opposite process, of a city introducing new rent control legislation. Sims' study also addresses the rent control legislation of the state of Massachusetts, which varies significantly from the ordinances of California, due mainly to the influence of the 1995 Costa-Hawkins Rental Housing Act. The legislation outlawed in Massachusetts had specific provisions which differentiate it from the ordinance in East Palo Alto including:

- (1) the creation of a centralized commission with the power to set maximum rents rather than maximum percentage rent increases,
- (2) laws to curtail the conversion of units to condominiums to remove apartments from the rental stock,
- (3) and regulation that forbade the eviction of tenants without express approval from the commission

(Sims, 2007, p. 131). The differences between both the direction and the specifics of the deregulation studied by Sims and the ordinance introduced in East Palo Alto allow for the possibility of significant differences in the observed results of rent control on the availability of rental units. Sims concludes that the Massachusetts rent control regulations encouraged landlords to shift housing units away from the rental market thus decreasing the supply of rental units (2007, p. 142). However, the inherent discrepancies between the legislative acts mean East Palo Alto's rent control ordinance may differ substantially and therefore may not harm the supply of rental units in the housing stock.

3. Theoretical Discussion

The enactment of rent control regulations in East Palo Alto provides a natural experiment by which I can estimate the effects of rent control on the supply of rental housing units through difference-in-differences regression analysis. Contrary to traditional economic intuition regarding the consequences of rent control, I hypothesize that introducing price and eviction regulations will not negatively impact the availability of rental units due to the specifications of second generation rent control.⁷ A simple interpretation of economic theory suggests that any instance of price ceiling will inevitably lead to a decrease in the supply of rental units and thus create an inefficiency. Regulation may manufacture uncertainty and increase the costs of supplying housing. This suggests both long-run and short-run effects will reduce the stock of rental housing. However, second generation rent control allows for rents to rise to market rates between tenancies which indicates landlords will not have a direct incentive to remove rental units from the housing market.⁸ This implies the economic implications of second generation rent control may be more ambiguous and dependent on the circumstances of individual municipalities.

I suspect the circumstances of East Palo Alto will contribute to the introduction of rent control not having a significant impact on the stock of rental units. There is a reputation of extensive gentrification in the Bay Area which could translate into high turnover of rental units (Harris, 2015). Rental units changing hands in quick succession suggests that rent prices would remain close to market levels, as second generation controls only keep rents artificially low during sustained tenancies. Landlords have an incentive to keep rental units on the market if rates hover close to market rents, and therefore the availability of rental units would not be significantly altered by the introduction of rent control regulations. However, the consequences

⁷ Refer to section 2.1.

⁸ Assuming there is high turnover among units to keep rental rates similar to market levels. Otherwise landlords may choose to sell properties rather than rent.

of this phenomenon mean rent control legislation will do little to prevent the rental rates from increasing with markets.⁹

4. Empirical Strategy

4.1 Prediction Testability and Supporting Evidence

This study examines the impact and implications of the rent control ordinance introduced in East Palo Alto in 2010, effective as of 2011, on the supply of rental units in the housing market. I predict that the price and eviction control regulation will have no significant effect on the availability of rental units due to the exemptions for newly constructed buildings and the high turnover of leases. I expect the city of East Palo Alto to finance the construction of low-income housing to maintain its reputation as “a pocket of affordability for low-income households who might otherwise be excluded from the affluent region” (Harris, 2015, p. 1). Additionally, E.P.A. has a high proportion of multi-family dwellings which may allow for extensive tenure under a single lease and prevent rental units from being removed from the market by landlords (Harris, 2015).

Evidence to support my hypothesis would hinge on my regression analysis not showing a statistically significant relationship between the enactment of rent control legislation as the treatment and the stock of rental units available in the housing market. I would need to also find corresponding evidence of significant construction of new housing in East Palo Alto or a disproportionate amount of turnover among leases to explain the maintained availability of rental housing. Contradictory evidence to my hypothesis would necessitate my regression analysis to

⁹ This suggests the only manner in which rent control regulations may avoid negative consequences on the stock of rental housing is if they are necessarily ineffective. As is the case for most legislation, the creation of winners must correspond with the production of some losers as well. Conscientious voters must decide which losers and winners they care about most.

indicate a significant negative effect of the institution of rent control legislation on the stock of rental housing units.

4.2 Estimation Strategy

This study seeks to identify the effect of rent control on the supply of rental units in the housing stock of East Palo Alto. I estimate the availability of rental units by examining the proportion of total housing units occupied by renters to the remaining housing units which may be occupied by home-owners or vacant. Underlying this premise is the assumption that a decrease in the availability of rental units will translate into a decrease in the proportion of total housing units occupied by renters and a corresponding increase in either the proportion of units occupied by home-owners or vacancies.

To determine the regulation’s impact I compare the average outcome of interest for housing units in East Palo Alto and units in an established control group. This basic difference-in-differences regression strategy is the standard practice for natural quasi-experiments where the treatment is considered ‘as if’ randomly assigned and introduced by exogenous factors.

Considering an example where the proportion of total housing units occupied by renters (y_{it}) is the outcome of interest, the estimation equation:

$$y_{it} = \beta_0 + \beta_1 D_{it} + \beta_2 T_{it} + \beta_3 (D_{it} \times T_{it}) + \varepsilon_{it} \tag{1}$$

represents the status of rental unit i as a linear function of whether the observation is in the post-treatment time period (D_{it}), whether the observation received the treatment of rent control (T_{it}), an interaction between the two ($D_{it} \times T_{it}$), and an error term (ε_{it}). If the control group is sufficient to account for other confounding influences then Least Squares estimates of β_3 may be interpreted as the causal impact of the East Palo Alto

rent control ordinance on the proportion of housing units occupied by renters in the affected area. The key assumption of the difference-in-differences regression strategy is that the assignment of the treatment is uncorrelated with the error term.

4.3 Establishing the Control Group

I selected Fairfield, California as the control group in my regression analysis because of a clear visual parallel trend in the proportion of total housing units occupied by renters, as opposed to home-owners or vacant. The visible similarity between the trends in the proportion of total

Figure 2 demonstrates the parallel trend in the proportion of total housing units occupied by renters during the pre-treatment time period between the Control Group (Fairfield) and the Treatment Group (East Palo Alto). *Source:* American Community Survey Housing Characteristics Data Profiles (2000, 2006, 2010).

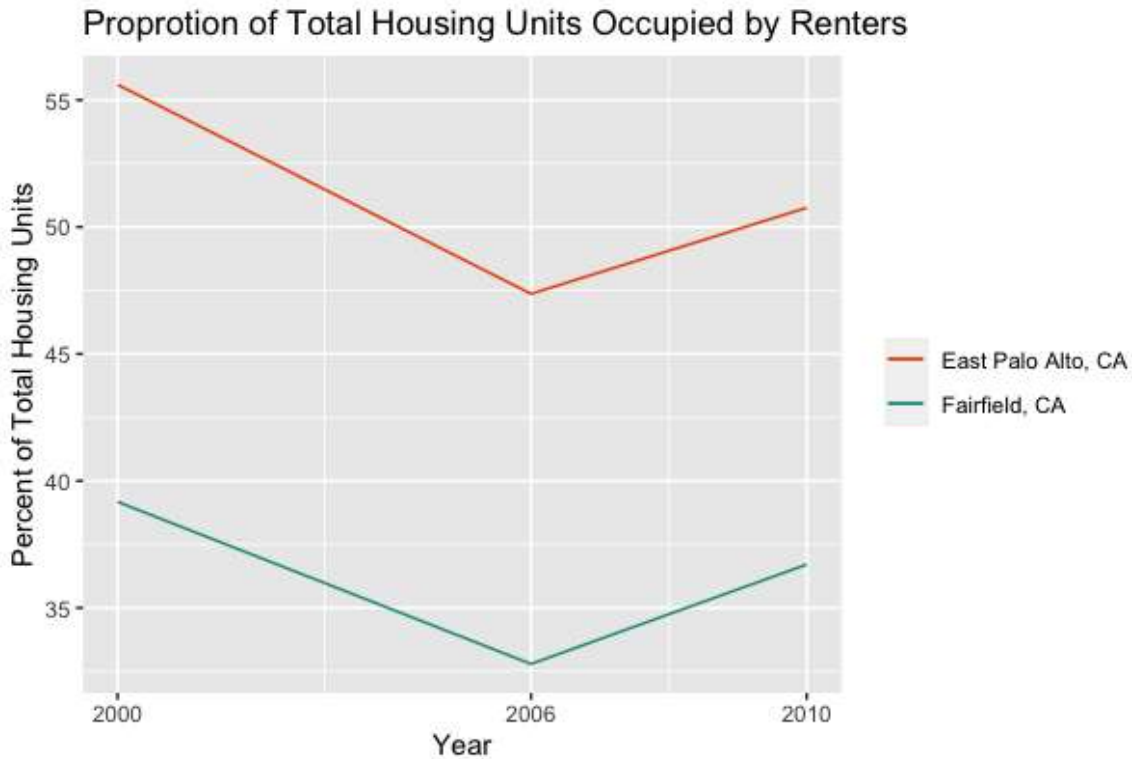


Fig. 2. Pre-treatment Parallel Trend in Variable of Interest

housing units occupied by renters, which approximates the availability of rental units, was sufficient evidence to establish Fairfield California as the control group. Therefore Fairfield will

act as an estimation of what trend the proportion of total housing units occupied by renters in East Palo Alto would have followed if not for the enactment of rent control legislation in 2010. This means the trends in Fairfield in the post-treatment time period approximate a counterfactual for what the trend of interest would have been in East Palo Alto without policy intervention.

5. Data

5.1 Data Description

The primary data for this study came from the American Community Survey (ACS) using census data for the years 2000 and 2010 and ACS Data Profiles - Housing Characteristics data for 2006 and 2011-2019. Table 1 provides descriptive summary statistics for the dataset. The ACS is a derivative of the U.S. Census Bureau and they publish yearly data profiles of the most frequently requested social, economic, housing, and demographic information specific to an individual 'place' or municipality (Census.gov/acs). These data profiles are particularly useful because it annually records resident's responses to a variety of questions about rent, housing characteristics, and demographic information. This provides a large amount of data about the housing situations for specific municipalities which was crucial for this study. The data is highly reliable as the ACS and the Census Bureau are extremely respected and trusted sources of data. Given the nature of my experiment, I have only twenty-four observations across twelve years of interest from two groups: the treatment (East Palo Alto) and control (Fairfield).

There are limitations to using this data. The primary disadvantage is the availability of data profiles prior to 2010 and the evolving specificity of the survey. I could only consistently access a single data profile for the pre-treatment time period (2006) and that profile did not include all the information of the profiles in the following decade. This means there are multiple

crucial factors that I could not include in my regression analysis because I only had information for the post-treatment time period.

Table 1
Descriptive Statistics

Variable	n	Mean	S.D.	----- Quantiles -----				
				Min	.25	Mdn	.75	Max

-> treatment=0								
percent_occupied	12	94.39	1.68	91.70	92.78	94.80	95.63	97.10
percent_owner	12	55.57	1.97	52.96	53.75	56.00	56.99	58.91
percent_renter	12	38.82	2.93	32.79	36.78	39.46	41.30	42.04
tot_housing_units	12	36350.83	1696.46	31792.00	35989.50	36548.50	37322.50	38372.00

-> treatment=1								
percent_occupied	12	92.89	2.98	88.05	90.71	92.96	94.73	98.38
percent_owner	12	36.55	3.17	32.14	34.29	35.96	38.70	42.77
percent_renter	12	56.35	4.78	47.37	53.09	56.68	59.71	63.68
tot_housing_units	12	7785.92	367.15	7091.00	7562.50	7783.50	7942.50	8413.00

Notes. The table presents the author’s calculations of basic summary statistics based on the ACS Data Profiles on housing characteristics from 2000, 2006, 2010-2019 from the areas of East Palo Alto and Fairfield. The table is organized into two subheadings with “treatment = 0” signifying Fairfield and “treatment = 1” signifying East Palo Alto.

5.2 East Palo Alto and Fairfield Data

I selected Fairfield, California as my control group in relation to East Palo Alto as my treatment group because of an established parallel trend in the proportion of total housing units occupied by renters in the pre-treatment time period.¹⁰ Fairfield is considered the midpoint

¹⁰ Refer to section 4.3.

between San Francisco and Sacramento while East Palo Alto is situated roughly halfway between San Francisco and San Jose. The two cities are roughly 72 miles apart.

East Palo Alto is a city in San Mateo County on the Peninsula of the Bay Area. The city was incorporated in 1983. Historically, East Palo Alto had a large population of African Americans due to redlining practices and racially-based deed restrictions in Palo Alto starting in the 1950s.¹¹ East Palo Alto has an extremely high population density, with 29,633 residents living on just over 2.5 square miles of land. Figure 4 demonstrates the significant disparities among racial groups across Fairfield and East Palo Alto. Over 62% of the entire population of

Figure 3 provides the relative locations of East Palo Alto and Fairfield, CA.



Fig. 3. Fairfield and East Palo Alto Locations

¹¹ Refer to Figure 10.

East Palo Alto identifies as Hispanic or Latino while just under 30% of Fairfield residents did the same. E.P.A. has a much higher percentage of Pacific Islanders within the city limits than Fairfield (11.1% and 1.4% respectively) while Fairfield has a more significant proportion of Asian residents than East Palo Alto (17.5% and 6.1% respectively). The city of Fairfield is close to 48% white while East Palo Alto is only 32.6% white. A fascinating racial similarity between the E.P.A. and Fairfield is the percentage of the total population that is black (14.6% and 14.5% respectively).¹²

Fairfield in Solano County in the North Bay subregion. The city has a population of

Figure 4 shows the racial breakdown of the populations of East Palo Alto and Fairfield as of 2018. *Source:* American Community Survey Demographic Characteristics Data Profiles.

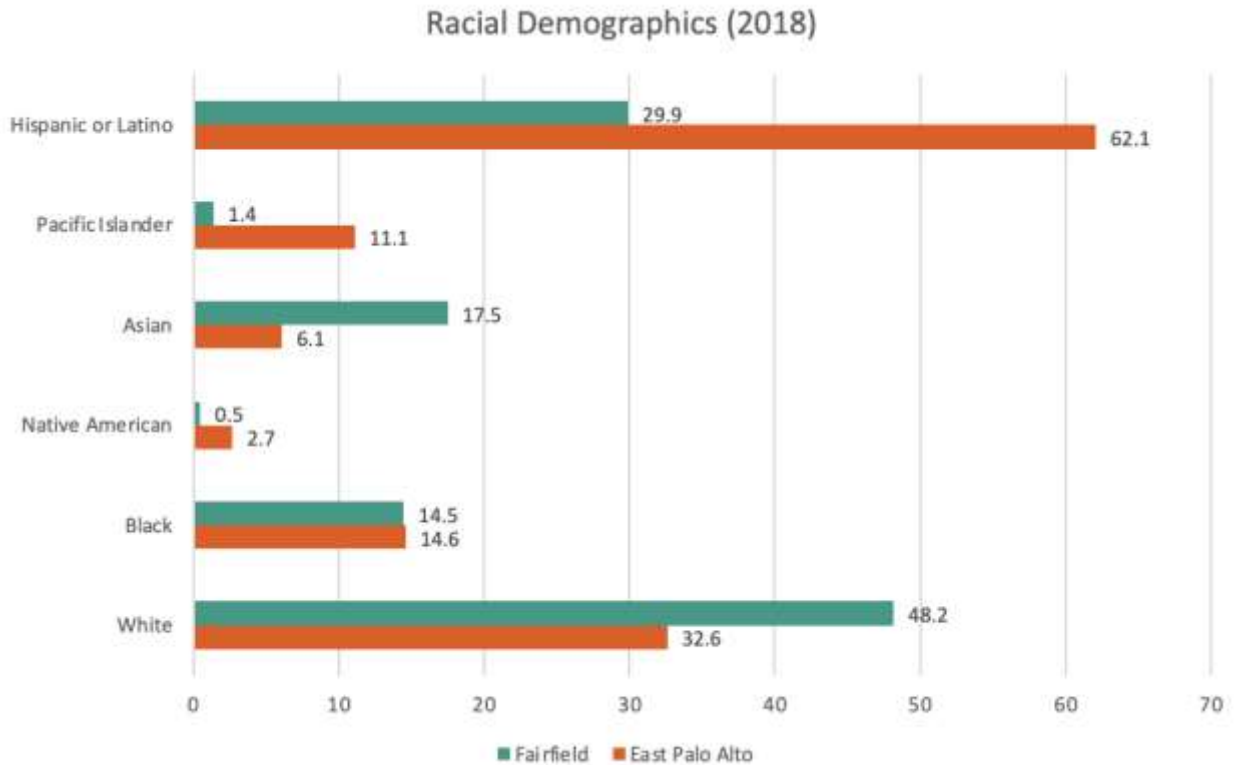


Fig. 4. East Palo Alto and Fairfield Racial Demographics

¹² It is clear that people select multiple racial categories because both Fairfield and East Palo Alto have racial percentages that add up to over one hundred percent.

114,101 residents as of 2018, situated on over 41 square miles of land. This means the population of Fairfield is higher than East Palo Alto, though the population density is significantly lower. Fairfield is home to the Travis Air Force Base and the headquarters of the Jelly Belly Corporation, while East Palo Alto is at the center of the technology industry in Silicon Valley. Beyond racial differences, East Palo Alto and Fairfield also deviate in median and mean household income levels. Figure 5 indicates that Fairfield has both higher median income and mean income per household than East Palo Alto. Additionally, the deviation between the medians and the means demonstrates that there is a greater variance in the income distribution of East Palo Alto and therefore a wider range of income levels per household is present.

Figure 5 describes the median and mean household incomes per household for East Palo Alto and Fairfield as of 2018. *Source:* American Community Survey Economic Characteristics Data Profile (2018).

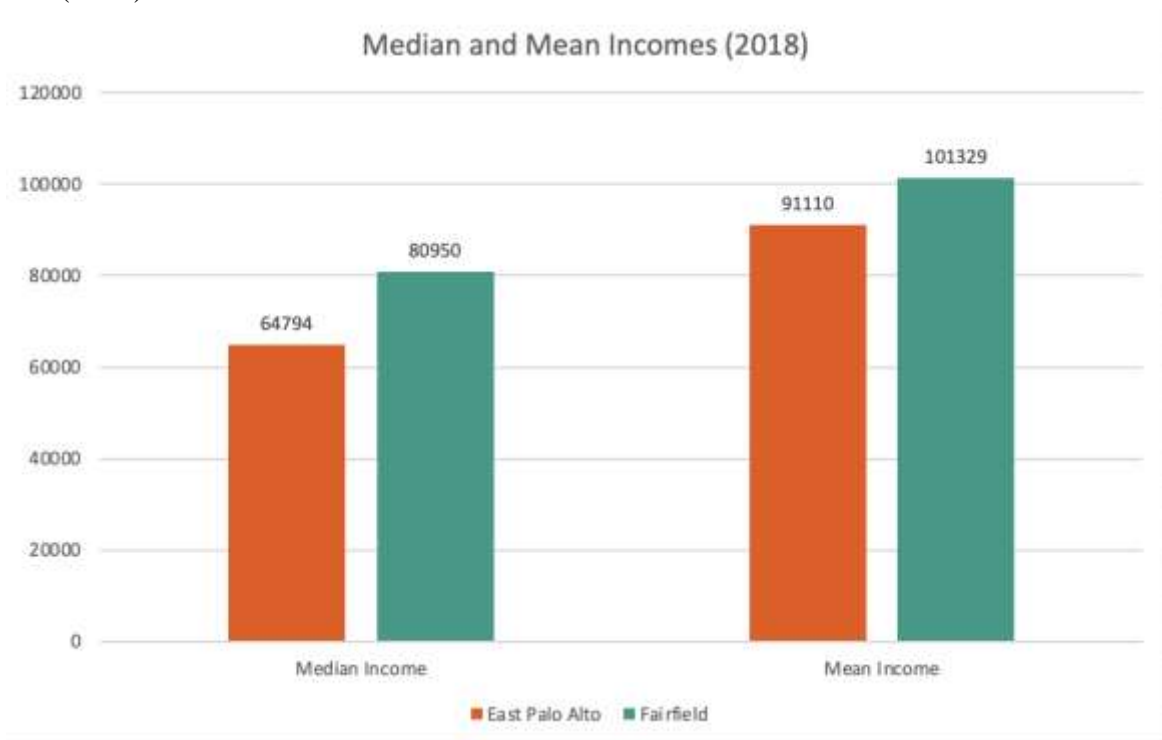


Fig. 5. East Palo Alto and Fairfield Median and Mean Incomes

Though Fairfield differs from East Palo Alto in many key features and thus is not the ideal control group, it had the best parallel trend in the proportion of total housing units occupied by renters out of all municipalities in the Bay Area.¹³ The discrepancies in racial demographics and median and mean income levels per household do not disqualify Fairfield from acting as a control group in this analysis because of the established presence of the parallel trend in the key variable.

6. Results

6.1 Quantity of Rental Units Supplied

Table 2 provides a formal estimate of the effect of introducing rent control legislation on the proportion of total housing units occupied by renters rather than vacant or occupied by homeowners. Due to the nature of difference-in-differences regression analysis, the coefficient of interest is the interaction term between the rent_control_{it} and $\text{east_palo_alto}_{it}$ dummies. This interaction,

approximates the proportion of total housing occupied by renters in East Palo Alto would have been without rent control, based on the trend set by the control group, and the actual result. This estimates the effect of the treatment without any influence from other factors.

The results of Table 2 show that the coefficient of the $\text{rent_control}_{it} \times \text{east_palo_alto}_{it}$ variable is not statistically significant. These results support my hypothesis because they indicate that there is insufficient evidence in my sample to conclude that a non-zero correlation exists between the introduction of rent control and the proportion of housing units occupied by renters. The standard error is high, as its value (3.09) is similar to the value of the coefficient (3.34). However, the R^2 value of 0.90 indicates the independent variable (treatment) explains 90% of the

¹³ Refer to section 4.3.

variance in the dependent variable (percentage of total units occupied by renters). This means the model is a good fit.¹⁴ Table 2 also displays the 95% confidence interval for the β_3 variable which ranges from [-3.11, 9.79]. This is quite a wide range and the coefficient of the interaction (3.34) falls in the middle of the interval, which suggests that more observations from a larger dataset would allow for more precise results. The results presented in Table 2 suggest that I can comfortably claim my regression yielded no evidence of a non-zero correlation between the enactment of rent control in East Palo Alto and the proportion of housing stock occupied by renters.

Table 2
Effects of rent control on the quantity of rental housing units supplied

Source	SS	df	MS	Number of obs	=	24
Model	1974.54609	3	658.18203	F(3, 20)	=	61.19
Residual	215.114865	20	10.7557433	Prob > F	=	0.0000
Total	2189.66095	23	95.2026502	R-squared	=	0.9018
				Adj R-squared	=	0.8870
				Root MSE	=	3.2796

percent_renter	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
time	3.458568	2.186397	1.58	0.129	-1.102176 8.019311
treatment	15.0204	2.677778	5.61	0.000	9.434654 20.60615
timetreatment	3.344237	3.092032	1.08	0.292	-3.105628 9.794102
_cons	36.22421	1.893475	19.13	0.000	32.27449 40.17393

Notes. The table presents a difference-in-differences regression based on the ACS Data Profiles on housing characteristics from 2000, 2006, 2010-2019 from the areas of East Palo Alto and Fairfield. The variables β_1 and β_2 are both dummies that differentiate between the pre and post-treatment time period and the treatment and control groups respectively. The β_3 variable is an interaction between the two dummies that captures the effect of the enactment of rent control on the proportion of housing units occupied by renters.

¹⁴ Though the high R² value is likely largely due to the small size of the dataset.

denoted by $\beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n + \epsilon$, represents the average difference between what the model term

The benefit of using the proportion of total housing units occupied by renters as the dependent variable in my regression model is the metric incorporates and implicates outside factors. If Table 2 included data only on the proportion of occupied housing units filled by renters, then a possible increase in vacancies could remain unnoticed and unaccounted for in the regression analysis. Employing the proportion of total units occupied by renters means that a significant shift in the proportion of vacancies of rental units would be noted in the regression model. The results of Table 2 indicate that enacting the treatment of rent control in East Palo Alto is not correlated with a corresponding shift in the proportion of total housing units that are unoccupied.

Figure 6 describes the proportion of total housing units occupied by renters in both East Palo Alto and Fairfield across the total time period. *Source:* American Community Survey Data (2000, 2006, 2010) and ACS Housing Characteristics Data Profiles (2011-2019).

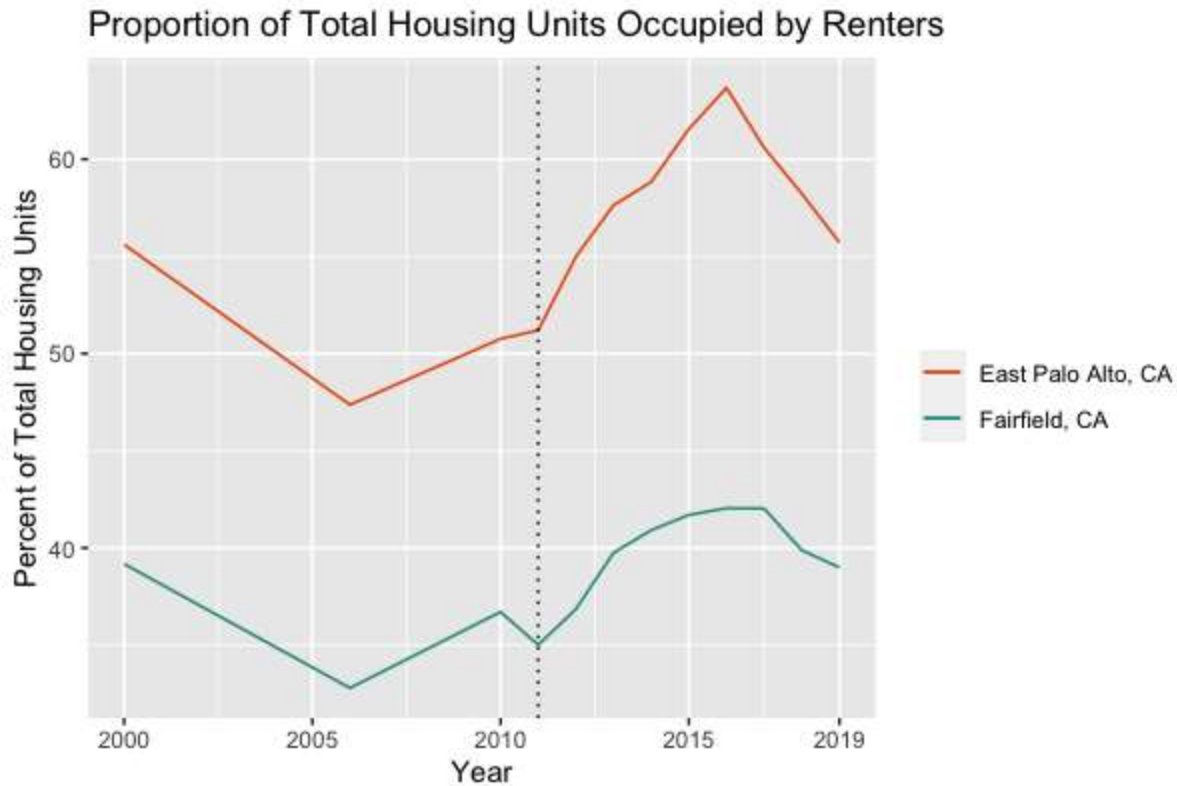


Fig. 6. Variable of Interest in Treatment and Control Groups (2000-2019)

Figure 6 shows a visual representation of the proportion of total housing units occupied by renters between 2000 and 2019 across both East Palo Alto and Fairfield. Though the ordinance was passed in 2010, the regulations did not go into effect until 2011 (represented by the vertical dotted line in Figure 6). This graph demonstrates that the trend of the proportion of total housing units occupied by renters remained similar between East Palo Alto and Fairfield after the legislation went into effect in 2011. In fact, the increase in the proportion of total units occupied by renters between the years of 2013 and 2016 was sharper and more dramatic in East Palo Alto than the control group of Fairfield.

6.2 *The Efficacy of the Legislation*

A possible explanation for why the rent control legislation in East Palo Alto did not have a negative effect on the availability of rental units is that the regulation did not effectively mitigate the trend of rising rents. To investigate the extent of the influence of the ordinance I

examined the median gross rent of East Palo Alto compared to the median gross rents of Fairfield and California, as shown in Figure 7. An unfortunate limitation of the dataset is the information regarding median gross rents is only available in the post-treatment time period (2010-2019). This means I cannot include median rent data in my regression analysis.

Figure 7 demonstrates that the rent control ordinance did not effectively reduce the rate of rent price increases in East Palo Alto compared to Fairfield or California. East Palo Alto's 2010 median gross rent was similar to Fairfield's and California's, but East Palo Alto's median rent grew at a faster rate and surpassed both between 2013 and 2014. In 2019, the median gross rent in East Palo Alto was considerably higher than the other parties. The results presented in Figure 7 indicate that the treatment introduced in East Palo Alto did not successfully prevent the median gross rent from rising with market rates. The outcomes presented in Figure 7 provide an explanation as to why the rent control regulations introduced in East Palo Alto did not have a negative impact on the proportion of total housing units occupied by renters and therefore the availability of rental units.

Figure 7 describes the gross median rents of East Palo Alto, Fairfield, and California between the years 2010 and 2019. *Source:* American Community Survey Housing Characteristics Data Profiles (2010-2019).

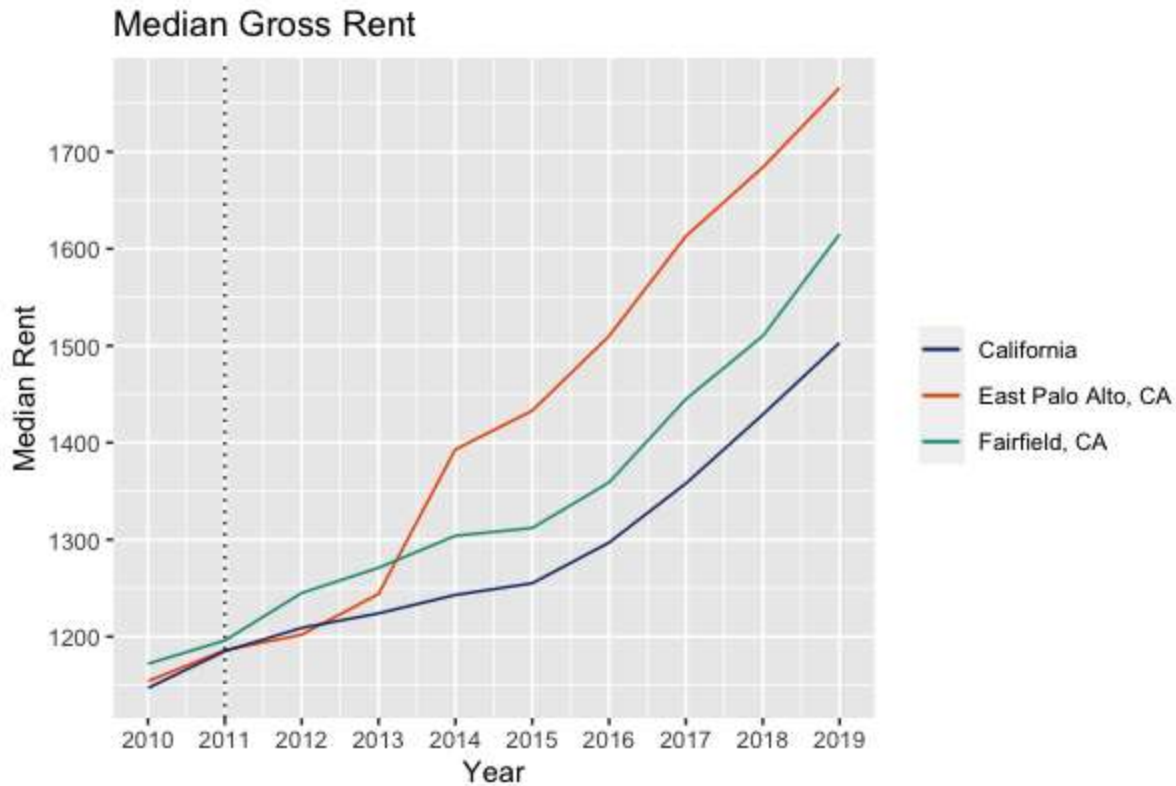


Fig. 7. Median Gross Rents (2010-2019)

6.3 Possible Explanations for the Legislation's Failure

Many of the possible explanations as to why the rent control ordinance in East Palo Alto did not effectively prevent an increase in median gross rent relate to the 1995 Costa-Hawkins Rental Act.¹⁵ One possible reason for the failure of the regulation would be a disproportionate increase in the construction of new housing, as Costa-Hawkins exempts all new construction from the effects of rent control. East Palo Alto defines new construction as any building constructed after 1988 (City of East Palo Alto's *Guide to Rent Control*). I approximated the proportion of total housing units that qualified as new construction (i.e. exempt from rent control) by measuring the percentage of total housing units built after 1990.

Figure 8 demonstrates that East Palo Alto did not have a disproportionate increase in the proportion of total housing units built after 1990 and thus a possible boom in the production of

¹⁵ Refer to section 2.2

new construction cannot explain the failure of the rent regulation in East Palo Alto. The proportion variable did vary more significantly in East Palo Alto than either Fairfield or

Figure 8 describes the yearly percentage of total housing units constructed after 1990 in East Palo Alto, Fairfield, and California between the years 2010 and 2019. *Source: American Community Survey Housing Characteristics Data Profiles (2010-2019).*

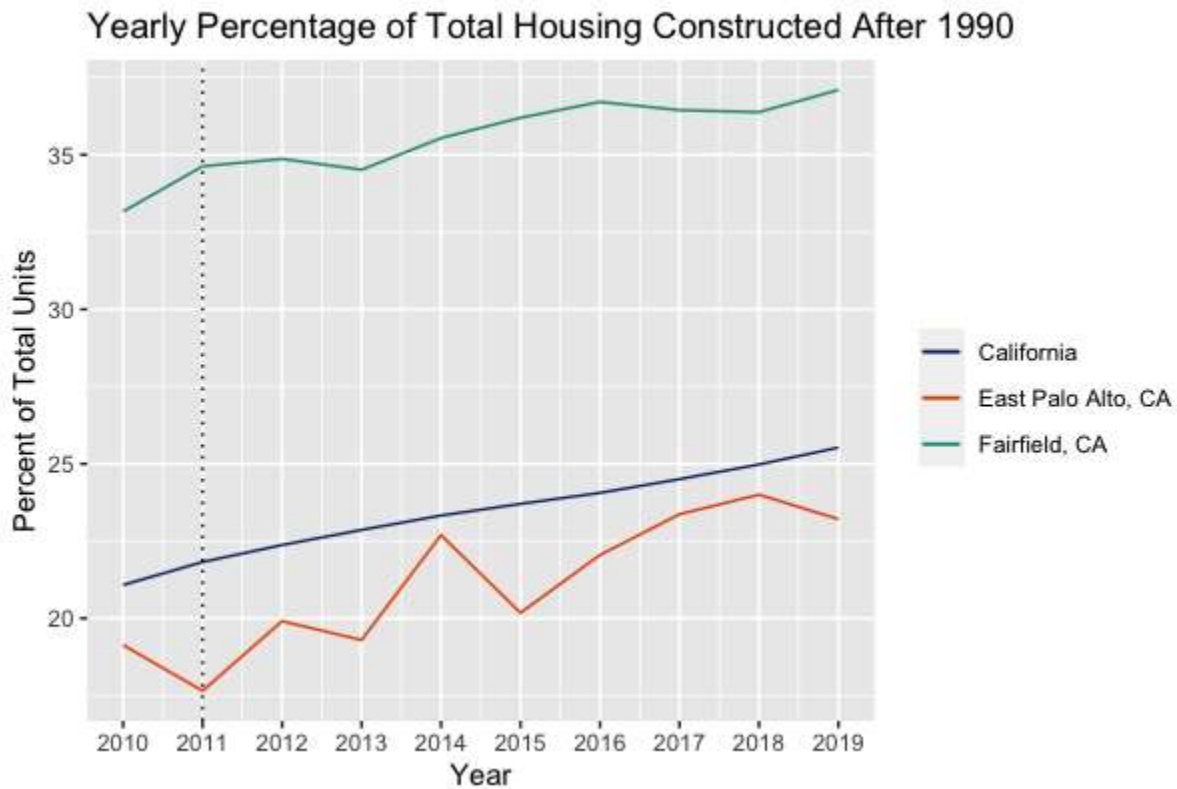


Fig. 8. Proportion of total housing units constructed after 1990

California, however that can be attributed to the size of each sample rather than a meaningful divergence in the propensity to build new housing. Figure 8 does not display any visual correlation between the enactment of rent control regulation and an increase in the proportion of housing units constructed after 1990. The absence of evidence means another reason may be responsible for the failure of effective rent control regulation in East Palo Alto.

Another possible source of the failure of rent control regulation in East Palo Alto is a significant level of unit turnover. Second generation rent control means rents adjust to market

rates in between leases.¹⁶ A conceivable explanation for a high rate of lease turnover is a consistent level of arrival and departure of high-income residents to sign leases at market rental rates. There is auxiliary evidence of high unit turnover in East Palo Alto, which is largely ascribed to the impact of gentrification. Figure 9 illustrates that the median age of residents in East Palo Alto is significantly lower than Fairfield, San Mateo County, or California. A possible explanation for the median resident of East Palo Alto residents being significantly younger than the reference populations is the reputation of E.P.A. for having affordable housing for the Bay Area (Harris, 2015). People may move to East Palo Alto for a few years when beginning their careers in Silicon Valley and then settle in a different municipality that offers more amenities and better public education. Young professionals living in East Palo Alto while establishing their careers and then moving to different areas to start families could explain the results illustrated in Figure 9.

More auxiliary evidence for the prevalence of gentrification in East Palo Alto is the shifting nature of racial demographics over the past decades. Figure 10 depicts sharp transitions in the racial demographics of the population of East Palo Alto over the past several decades. Though shifting racial demographics do not necessarily translate into high turnover in rental units, it does set a precedent for the influx of one population (Latino and/or Hispanic residents) and the exit of another (Black residents). Many attribute the exodus of Black residents to rising housing costs in East Palo Alto (Harris, 2015, 4). The shifting racial demographics of East Palo Alto can be interpreted as an antecedent for a prevalence of gentrification, and thus as complementary evidence for the possibility of high unit turnover. I can conclude there is a high possibility that gentrification and consistent turnover of rental units has contributed to the failure of rent control

¹⁶ Refer to section 2.1.

legislation in East Palo Alto. However, I cannot quantitatively measure the significance of rental unit turnover due to the limitations of my dataset.

Figure 9 details the median age of residents in East Palo Alto, Fairfield, San Mateo County, and California as of 2018. *Source:* American Community Survey Demographics Characteristics Data Profile (2018).

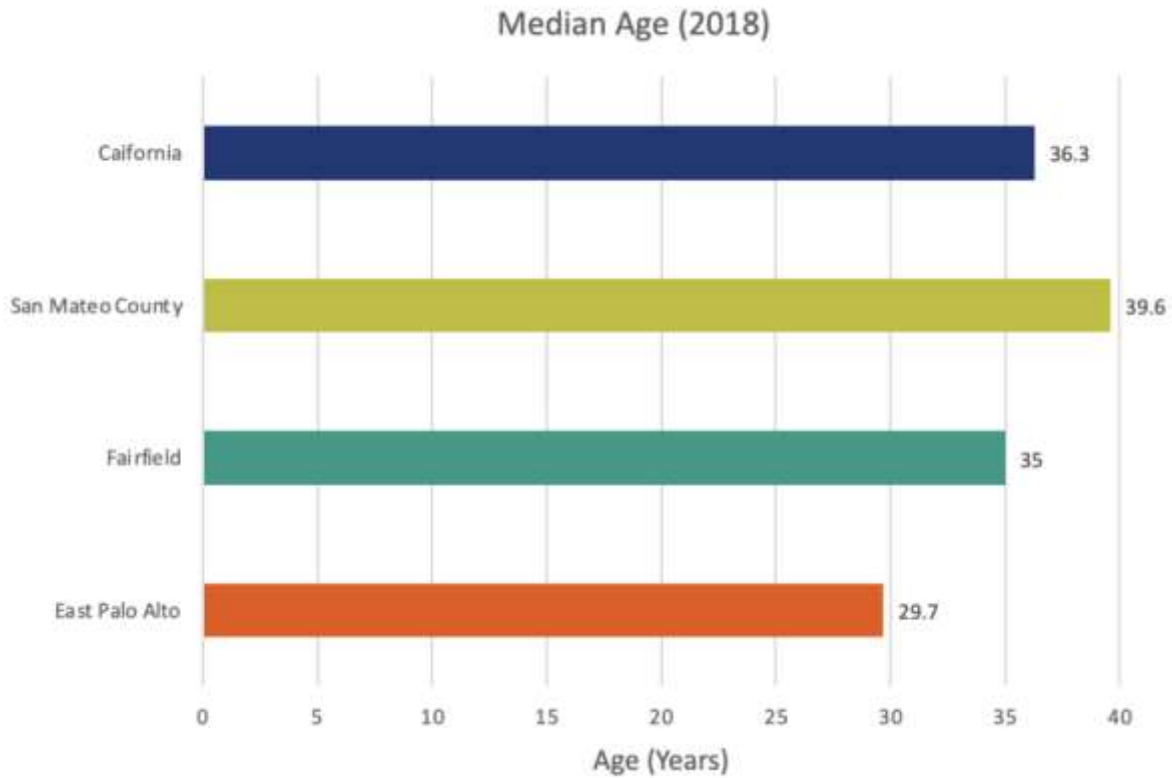


Fig. 9. Median age of residents in East Palo Alto, Fairfield, San Mateo County, and California

Another possible explanation for the failure of the rent control regulation in East Palo Alto is that the city has a high proportion of housing units that are exempt from legislation due to the categorical exemptions outlined by the Costa-Hawkins Rental Act.¹⁷ The automatic exemptions include single-family detached dwellings and condominium units. Therefore if East Palo Alto has an extremely high proportion of these units the rent control legislation will

¹⁷ Refer to section 2.2

Figure 10 details racial demographic information of East Palo Alto between 1980, 1990, 2000, and 2010. *Source:* 1980 Census, 1990 Census, 2000 Census, and American Community Survey Demographics Data Profile 2010.

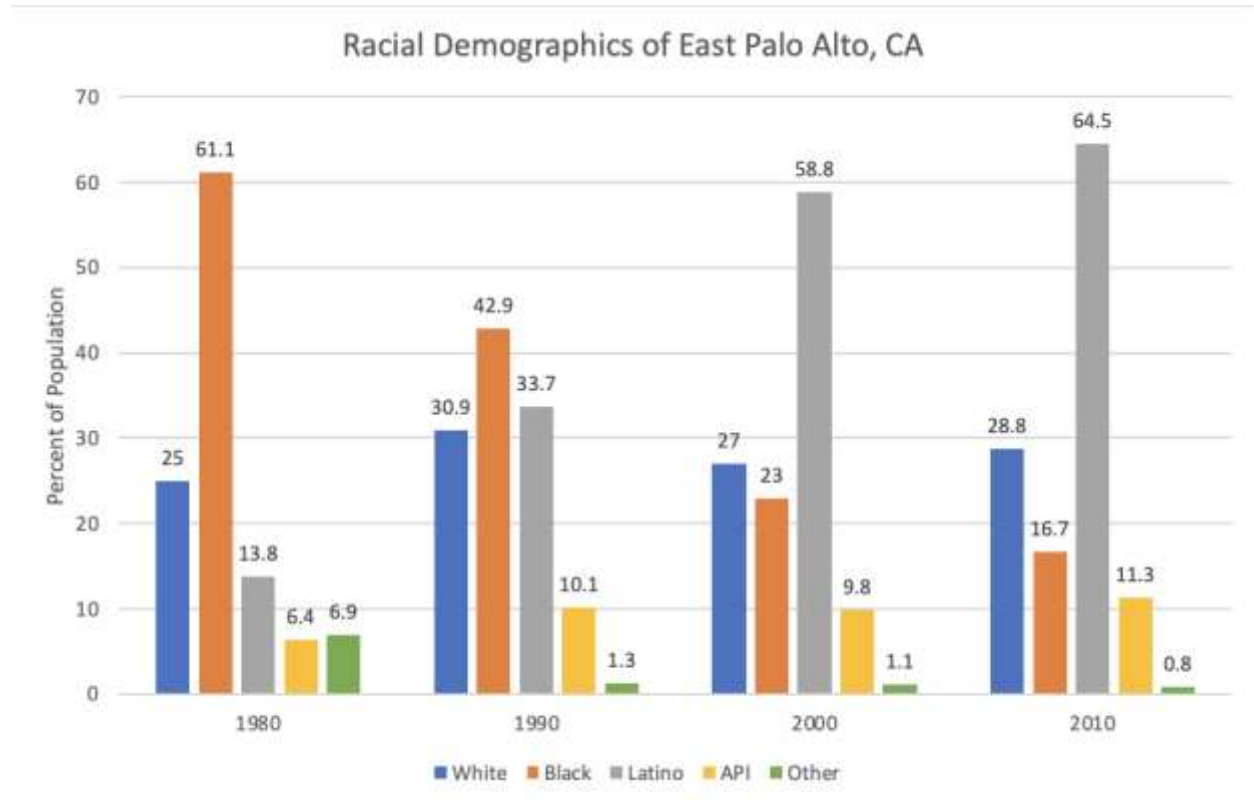


Fig. 10. Racial Demographics of East Palo Alto 1980, 1990, 2000, and 2010¹⁸

inevitably fail to keep rents below the market level. Another limitation of my dataset is it does not include information on the physical characteristics of specific units and therefore I cannot determine the prevalence of rental units categorically exempt from rent control.

7. Conclusion

The sudden introduction of rent control in East Palo Alto in 2010, which went into effect in 2011, provided a natural quasi-experiment by which to study the effect of rent control on the availability of rental units. My results indicate that the intuition presented in simple

¹⁸ Based on the racial demographic information provided from the Census and ACS it is clear that people selected multiple racial identities as adding each racial category results in greater than 100% of the population. However, this does not necessarily undermine the significance of the changing racial demographics of East Palo Alto as people who identify as multiple races presumably do so across decades.

microeconomic models may require more nuance for second generation rent controls which allow for rent prices to rise to market levels in between leases. My regression model did not provide any evidence that the enactment of rent control in East Palo Alto was correlated with a negative effect on the supply stock of rental units, which I approximate with the proportion of total housing units occupied by renters. This supports my hypothesis. However, my results were undermined by the realization that the rent control legislation in East Palo Alto did not effectively mitigate the increase in rental prices to market rates in comparison to Fairfield or California. This suggests that the lack of evidence of decreases in the availability of rental units could indicate standard economic intuition of the implications of rent control need modification for second generation regulations or simply be attributed to the failure of the legislation itself.

Future work could further research the economic assumptions of the consequences of second generation rent control, as it differs substantially from a simple price ceiling. Additionally, more investigation is required to deepen the understanding of the impact of rent control legislation on East Palo Alto. Access to data on median rents and new construction in the pre-treatment time period would allow those variables to be incorporated into the regression model, which could yield more significant results. Empirical data on the propensity of turnover among rental units in East Palo Alto would also add a meaningful element to research on the effects of rent control. The possibility of quantifying gentrification would certainly contribute to further research in the area of rent control in East Palo Alto. It is also possible that future studies would suggest that the Cost-Hawkins Rental Act necessarily and inherently undermines the efficacy of any rent control legislation in California.

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