CITY OF OAKLAND

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AGENDA REPORT

TO: Sabrina B. Landreth
City Administrator

FROM: Claudia Cappio
Assistant City Administrator

SUBJECT: Informational Report on a Proactive Rental Inspection Pilot Program

DATE: March 23, 2017

City Administrator Approval: /s/ SBL Date: 3/31/17

RECOMMENDATION

Receive an Informational Report on Creating a Pilot Proactive Rental Inspection (PRI) Program to Address Housing Habitability Concerns that Concentrate on Areas of the City that Pose the Highest Risk for Childhood Lead Poisoning and Proposals for Funding Consideration for the FY 2017-2019 Budget.

EXECUTIVE SUMMARY

This informational report outlines: (1) the purpose of PRI programs (to protect public health, safety and welfare), (2) an overview of Oakland's Safe Housing Inspection Program Pilot, (3) examples from other California cities, (4) a habitability analysis of Oakland's rental housing stock (a thorough look at lead, mold, and mildew), and (5) policy and cost considerations for launching a PRI pilot in Oakland.

Policy Considerations for the City Council:

- Whether or not to move forward with a Pilot PRI Program.
- What should be included in the inspections?
  - Initial Lead Screenings
  - Interior and/or Exterior habitability inspections
  - Others?
- What should be the prioritization of property issues?
  - Lead
  - Age
  - Past Code Enforcement, Police, and Fire Records
- What percentage of the PRI program will be cost recovering?
- Other considerations Council would like to discuss related to PRI.
- How Council would like to pursue next steps: ordinance, analysis of full scale PRI, pursuit of legal opinion on whether an ordinance is required to give inspectors "Proactive Access" to units, etc.?

Staff also offered a few policy alternatives at the end of the report in the "Policy Alternatives" section which City Council can also consider in addition to the policy questions listed above.

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CED Committee
April 11, 2017

BACKGROUND / LEGISLATIVE HISTORY

PRI programs around the United States represent an added layer of enforcement on top of traditional, complaint-driven code inspections. In a PRI program, all residential rental units covered by the program receive an initial inspection by a trained code enforcement officer. Generally in PRI programs, code enforcement officers inspect the interior and exterior of all units looking primarily for fire hazards, habitability, and substandard living conditions. Following this initial assessment, PRI inspectors annually visit a subset of the rental housing stock either through random or targeted selection to verify program compliance and inspect all units during a multi-year cycle. Typically, property owners pay for this increased workload through annual fees (a portion or the entire fee is allowed to be passed directly on to tenants).

Safe Housing Inspection Program Pilot

Beginning in November 2015, the City of Oakland launched the pilot Safe Housing Inspection Program (SHIP). The purpose of SHIP was to perform proactive fire and life safety inspections of residential rental properties meeting the R2 building classification (six or more units in three or fewer stories). As part of SHIP, Oakland Fire Inspectors performed an initial fire and life safety inspection of a rental unit. During that inspection, if the OFD Inspector saw a potential habitability violation they could make a referral to the Planning and Building Department for a follow-up habitability inspection. This pilot did not address childhood lead hazards. In some instances, OFD staff were able to identify potential lead hazards and refer to Alameda County Healthy Homes Department. Attachment A, Table 1 shows the performance of SHIP during the program's first program year.

Inspection Authority

In most jurisdictions with PRI programs, specific ordinances were passed to provide the appropriate inspection authority to perform proactive inspections. While a full-scale PRI program in Oakland would require this ordinance, staff needs further clarification from the City Attorney regarding whether a *pilot* PRI program would also require an ordinance.

If an ordinance is required, a model PRI ordinance has been created by ChangeLab Solutions, to assist cities with creating PRI programs. Such an ordinance could be used as the basis for an ordinance in Oakland.

ANALYSIS

PRI programs are intended to more effectively identify housing habitability issues in the rental housing stock. The main goal of PRI programs is to protect vulnerable tenants from unsafe living conditions by systematically and preemptively inspecting rental units for code violations.

Part of how these programs are effective at achieving this goal is by understanding two main questions:

1) How do PRI programs increase effectiveness of code enforcement efforts?
2) What potential problems should PRI programs look for? / Where are the problems PRI programs should be addressing?

To answer these questions, staff analyzed three main elements as part of this informational report. The first element is a review of existing PRI programs in California to understand successful program design elements. The second is an analysis of Oakland's existing housing habitability conditions to understand what potential problems a PRI program would need to address. The last area is identifying potential policy considerations that will likely arise from a PRI program.

1) PRI Programs in California

For this report, staff focused on three main jurisdictions with PRI policies: City of Los Angeles, City of Sacramento, and the City of San Jose. Staff chose these cities due to existing analysis of these polices *(An Analysis of Proactive Rental Inspection Policies in California,* Attachment C). This analysis helps evaluate the effectiveness of PRI programs.

Note: these jurisdictions do not reflect all cities in California with PRI policies. A complete list of these California PRI programs does not currently exist, and new policies continue to be enacted. In the last two years, the City of Fresno and the City of Long Beach have both launched PRI programs. A comparison chart of these programs can be found in Attachment B.

City of Los Angeles – Systemic Code Enforcement Program

The Los Angeles Systematic Code Enforcement Program (SCEP) was established in 1998. SCEP inspects all multi-unit rental properties over a three-year cycle (with the exception of owner occupied units). Inspectors perform a habitability inspection of the entire building and all building units when inspecting a property.

City of Sacramento – Residential Housing Inspection Program

The City of Sacramento Residential Housing Inspection Program (RHIP) was established in 2008. During the first five years of the program, RHIP inspectors performed initial inspections of all rental units in the city, including single family homes . After this initial inspection, RHIP allows property owners to self-certify their rental units by performing their own inspections annually and reporting compliance to the city. RHIP then annually inspects a randomly selected 10 percent of self-certified units. If a unit fails this inspection, the city removes the unit from the self-certification program and conducts a mandatory inspection of the unit the subsequent year.

City of San Jose – Multiple Inspection Program

The San Jose PRI program was established in 1998 with program changes occurring in 2015. San Jose's program inspects all rental properties with three or more units over three-, five-, and six-year cycles. Property owners who respond timely to code violations stay in a six-year cycle utilizing a self-certification program similar to Sacramento's RHIP. If a property owner receives a violation and is untimely in abatement, they are moved to a second tier. Tier 2 properties are placed in a five-year inspection cycle where inspectors proactively inspect 25 percent of units at the time of inspection. If a property owner receives more than one violation per unit and is untimely, they move into a third tier with inspections occurring on a three-year cycle, with 50 percent of units proactively inspected. Owners can move between tiers based upon good behavior. Inspectors enforce a minimum habitability standard through enforcing building and housing codes and can issue administrative citations for unsafe or unhealthy conditions.

2) Effectiveness of Proactive Rental Inspection (PRI) Programs

The report, *An Analysis of Proactive Rental Inspection Policies,* attempted to measure the changes in housing quality in these three cities before and after the implementation of a PRI program. To measure these changes quantitatively, the Poor Quality Index (PQI) was used in the previous analysis. PQI is a set of indicators found in the American Housing Survey, used to measure housing quality. The findings show that the presence of a PRI program was a factor in housing improvements, but not the only factor.

A follow-up report, *An Analysis of Proactive Rental Inspection Policies* (Attached D), used a more simplified statistical method to look at the changes in housing quality between single family homes (SFH) and multi-family homes (MFH) by PRI programs in these cities. When PQI is measured in Los Angeles and San Jose in the years before and after the presence of a PRI program, MFH housing quality had improved at a greater rate than SFH – Los Angeles (20 percent greater) and San Jose (29 percent greater). There was no noticeable change between the two in Sacramento (in part due to both SFH and MFH being covered by RHIP).

Included in both reports are interviews with program staff to better understand best practices surrounding PRI program design. The report found that successful programs had the following characteristics:

- Extensive tenant and property owner outreach; such outreach is crucial to program sustainability and stakeholder buy-in. In Los Angeles, SCEP utilized a *Promatora* model, partnering community health workers with code inspectors during inspections. *Promatores* help create community buy-in and increase inspector access to rental units. RHIP worked closely with their rental housing association to create the self-certification program and the training curriculum.
- Fully staffed PRI programs are essential to improving housing quality. Proper staffing allows the PRI program to inspect all covered rental units quickly and set a program baseline. Most PRI programs begin with a larger staff and slowly reduce staffing as program demands wane.
- The inspection focus is on highest risk properties. Self-certification programs and risk-based targeting focuses program resources towards recalcitrant property owners and does not penalize compliant owners.

3) Analysis of Oakland's Housing Habitability

Next, staff analyzed Oakland's existing housing habitability conditions. The purpose of this analysis was to understand the types of properties and habitability issues a PRI program would target in Oakland. To help with analysis, staff analyzed three main elements of Oakland's existing housing stock:

1) Building Size
2) Housing Habitability
3) Health Outcomes

Building Size

As seen in Table 1, the 2015 U.S. Census Bureau's American Community Survey estimates 95,402 rental units in Oakland. Twenty-five percent of these rental units are in single family homes. With an average rental household size of 2.43 people per dwelling unit, there are

approximately 232,000 renters in the City of Oakland.

Table 1. Rental Unit and Population Estimates

Total Rental Units	95,402
Single Family Homes	23,564
Duplexes	8,682
3 to 4 Units	15,741
5 to 9 Units	11,353
10+ Units	36,062
Rental Household Size	2.43
Estimated Rental Population	231,827

Sources: City of Oakland; U.S. Census Bureau, 2015 American Community Survey

Using data from the Alameda County Assessor's Office, Urban Strategies Council found in their report, *Building an Indicator Base for Healthy Housing Issues in Oakland* (Attachment E), the following breakdown of residential building types by neighborhood (Tables 2-4)

Table 2. Top 10 Neighborhoods with the Most Single Family Homes

Rank	Neighborhood/Census Tract	Single Family Homes
1	Montclair: 4045.02	2,246
2	Glen Highlands: 4044	1,823
3	Piedmont Pine: 4046	1,761
4	Lincoln Highlands: 4067	1,669
5	Crocker Highland: 4051	1,618
6	Caballo Hills: 4081	1,606
7	Maxwell Park: 4077	1,564
8	Eastmont Hills: 4083	1,442
9	Bancroft/ Havenscourt: 4087	1,416
10	Bancroft/ Havenscourt: 4086	1,208

Table 3. Top 10 Neighborhoods with the Most 2-4 Unit Properties

Rank	Neighborhood/Census Tract	2-4 Unit Properties
1	Longfellow: 4010	348
2	Hoover/Foster: 4014	309
3	Sante Fe/ N. Oakland: 4007	299
4	Temescal: 4011	262
5	Shafter/ Rockridge: 4003	234
6	Fairfax/ Lower Maxwell Park: 4076	232
7	North Stonehurst: 4093	227
8	Lower Laurel/ Allendale: 4070	226
9	Peralta/ Hacienda: 4065	224
10	San Antonio/ Highland Terrace: 4058	216

Table 4. Top 10 Neighborhoods with the Most 5+ Unit Properties

Rank	Neighborhood/Census Tract	5+ Unit Properties
1	Cleveland Heights: 4052	112
2	Adams Point: 4036	106
3	Cleveland Heights: 4053.01	87
4	Eastlake/ Clinton: 4054.01	81
5	Adams Point: 4037.01	71
6	Lakeshore: 4038	70
7	Ivy Hill: 4055	70
8	Temescal: 4011	65
9	Oakland Ave/ Harrison St: 4035.01	65
10	Bella Vista: 4056	62

Based upon an analysis by the Urban Strategies Council, Oakland's northeastern neighborhoods have higher numbers of single-family homes. Neighborhoods in North Oakland have the highest frequency of two (2) to four (4) unit properties. Finally, neighborhoods surrounding Lake Merritt have the highest numbers of five (5) or more unit properties.

Housing Habitability

Urban Strategies Council analyzed 60,000 code enforcement complaint descriptions from 2003 to July 2013 in Oakland. Table 5 shows the top 10 code enforcement complaint descriptions they identified.

Table 5. Top 10 Code Enforcement Complaint Descriptions (2003 to July 2013)

Rank	Complaint Description	Frequency	Percentage of Total Code Enforcement Complaints
1	Trash	11,028	18%
2	Debris	9,364	16%
3	Overgrown; Overgrowth	8,691	14%
4	Vegetation	5,777	10%
5	Vehicle	2,498	4%
6	Garbage	1,979	3%
7	Windows	1,567	3%
8	Weeds	1,422	2%
9	Leaking; Leaks	1,416	2%
10	Driveway	1,240	2%

These 10 descriptions accounted for 44,982 total complaints or 75 percent of all complaints during this timeframe.

Code enforcement complaints help quantify housing habitability in units where residents have filed a complaint. However, residents may be reluctant to file complaints. One way to understand habitability conditions in units where residents may not file a complaint is through data collected by the American Housing Survey (AHS). The following tables are based on data from the U.S. Census AHS in 2011. Table 6 lists the percentage of positive responses to

habitability related AHS questions by building size (Note: building size data was available only for 3 to 5 unit properties and for 6 or more unit properties).

Table 6. Percentage of Positive Responses to 2011 AHS Questions Related to Habitability in Oakland

Building Size	Person in HH has Asthma	Heating Issues in last 12 months	Sewage Issues in last 12 months	Signs of Mold	Signs of Leaks	Signs of Rats	Signs of Mice	Signs of Vectors
Overall	5.80%	2.98%	0.75%	6.05%	9.53%	2.32%	5.05%	8.12%
SFH	6.81%	2.86%	0.44%	6.81%	9.23%	4.40%	8.35%	6.59%
2 Units	6.93%	3.96%	0.99%	4.95%	15.84%	0.99%	4.95%	8.91%
3-5 Units	5.98%	9.24%	-	5.43%	8.15%	1.63%	3.26%	10.33%
6+ Units	4.50%	2.57%	1.28%	5.78%	8.99%	0.86%	2.57%	8.57%

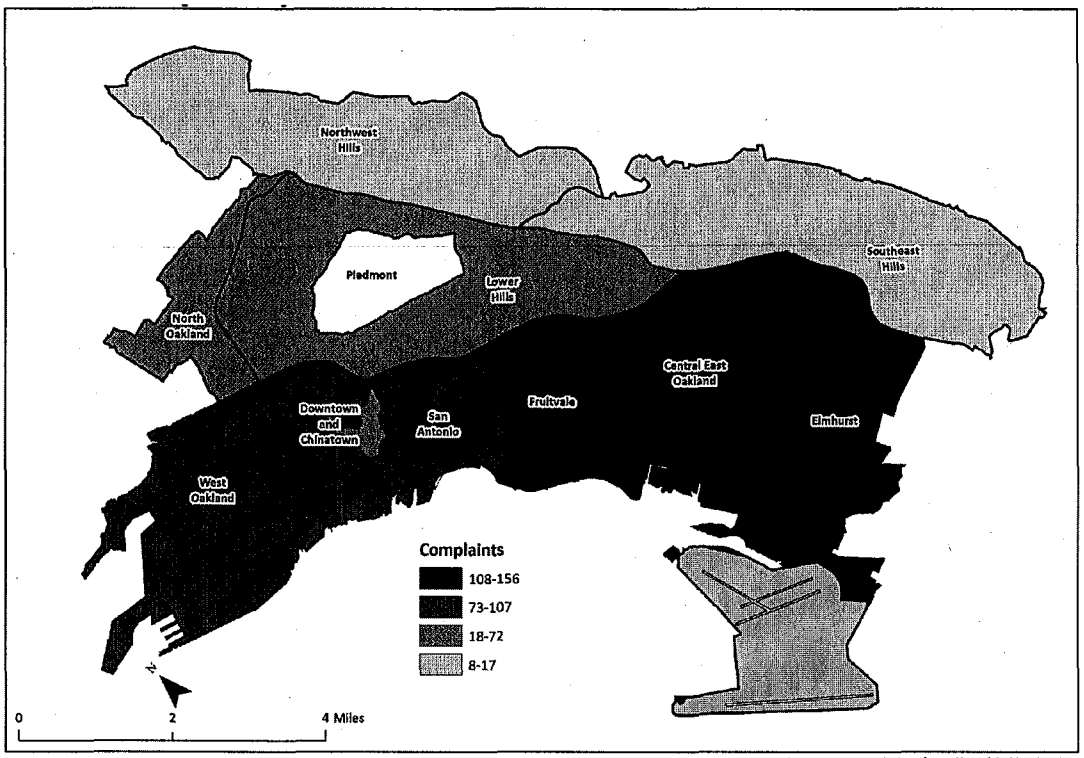
For Signs of Leaks, 3-5 unit buildings reported below average signs of leaks, whereas two-unit buildings reported higher than average.

For AHS questions related to habitability, two main trends stand out. First, buildings with six or more units reported lower than average percent positive responses on all habitability issues with the exception of sewage issues and signs of vectors. Second, buildings with two- to five-units reported higher than average percent positive responses on all habitability issues with the exception of signs of mold, rats, and mice. These trends suggest that larger buildings have fewer habitability issues reported, whereas the majority of habitability issues are reported within smaller buildings with two- to five-units.

Research performed by Alameda County's Community, Assessment, Planning, and Evaluation (CAPE) on the City of Oakland in 2013 finds similar trends when looking at habitability complaints geographically. Figure 1 shows the distribution of total number of habitability complaints based upon total number of complaints by neighborhood. Figure 2 shows the rate of habitability complaints by neighborhood per 100 properties.

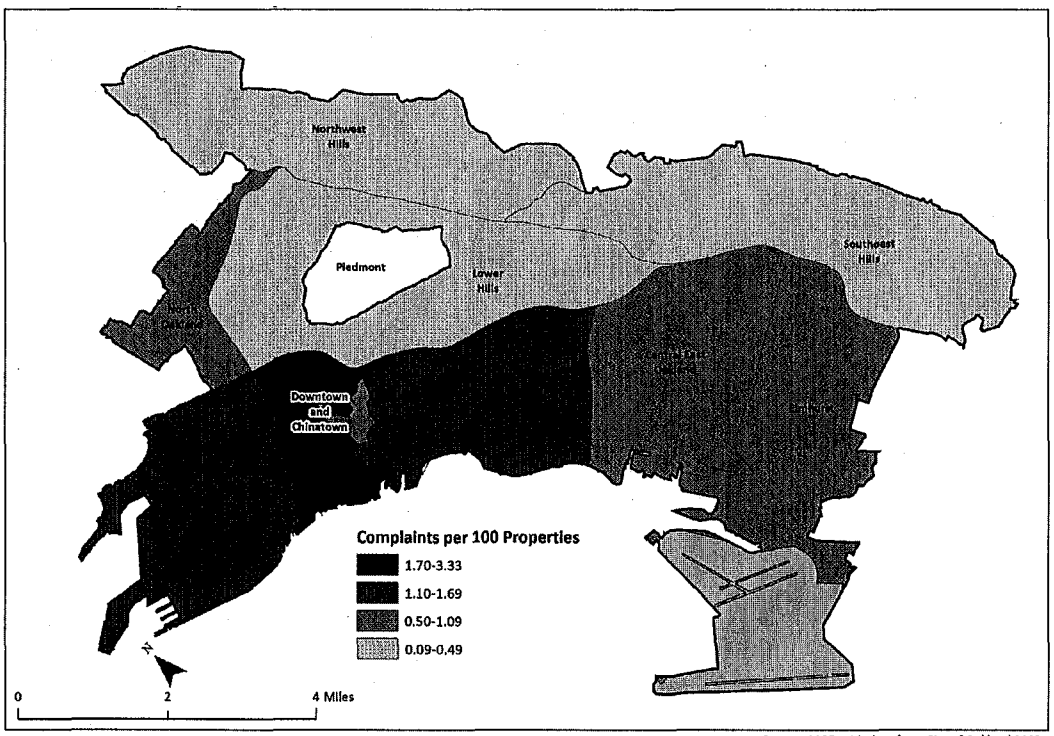
Neighborhoods in East Oakland tend to have the highest total number of habitability complaints. The Downtown and Chinatown neighborhoods have the highest rates of habitability complaints per 100 properties. The Downtown Oakland, Chinatown, and Fruitvale neighborhoods have the highest combination of number and rate of habitability complaints in Oakland.

Figure 1. Total Habitability Complaints by Neighborhood (based upon total complaints)



Source: CAPE, with data from City of Oakland 2013.

Figure 2. Rate of Habitability Complaints by Neighborhood (per 100 properties)



Source: CAPE, with data from City of Oakland 2013.

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Health Outcomes

While the request the City Council asked to staff to focus on was lead, staff also analyzed health outcomes related to mold, due to the prevalence of asthma in Oakland. The presence of lead and mold in a home is correlated to health conditions like Attention Deficit Hyperactivity Disorder (ADHD) and asthma. Higher instances of asthma and ADHD mean increased medical costs, like emergency department room visits and hospitalizations for asthma and special education costs for lead. PRI programs attempt to identify these environmental causes and try to get them abated through enforcement. Such abatements can help to increase the health outcomes through improvements in housing quality. Staff attempted to measure the current rates of lead-based paint and the prevalence of asthma as a way to set a baseline by which to measure the effectiveness of a potential PRI program.

Lead-Based Paint (LBP)

As reported by Reuters in their December 19, 2016 article, *Unsafe at Any Level,* two of Oakland's zip codes, 94601 and 94606, were listed among the highest with childhood blood lead levels in the United States. These lead rates use data from a 2012 California Department of Public Health study of childhood lead testing, where over 250 tests were conducted. Table 7 provides the lead rates for all of the Oakland zip codes in that study.

Table 7. Lead Rates by Zip Code of at least 250 Children Under 6 Tested (2012)

Zip Code	Total Tested	# With Elevated BLL*	% With Elevated BLL*
94601	502	38	7.57%
94606	295	22	7.46%
94605	377	27	7.16%
94607	253	18	7.11%
94621	448	28	6.25%
94608	257	16	6.23%
94603	400	24	6.00%
Overall	**2,793**	**189**	**6.77%**

*BLL= Blood Lead Levels
Source: California Department of Health 2012

Similar to trends in housing habitability conditions, child lead poisoning is the highest in West and East Oakland neighborhoods. These elevated lead levels can be traced primarily to lead based paint (LBP). Units in these neighborhoods tend to be built pre-1978, the year when LBP were banned, and have poor housing conditions leading to a higher likelihood of peeling paint and paint dust.

In a 2009 report, *Childhood Lead Poisoning: Conservative Estimates of the Social and Economic Benefits of Lead Hazard Control*, the author found that even small increases in lead exposure have significant health impacts including: lower IQ rates, reductions in lifetime earnings, increases in demand for special education, and correlations with more violent behavior and crime rates.

While significant efforts have been made by Alameda County Public Health Department

(ACPHD) and the federal government, 36 percent of applications for HUD lead hazard control grants operated by ACPHD drop out of the process. Typical reasons for dropping out include lack of interest or ineligibility due to: income limits, no children under age six, post 1978 building, or living outside of the program area.

ACPHD also reports that over the last two years only 22 percent of properties where lead hazard remediation has occurred had children with lead poisoning present. This figure suggests that the majority of property owners seeking to prevent child lead poisoning are not under pressure to perform the abatement; rather they are doing so to protect their families, tenants and maintain the value of their properties. Regular "Renovation, Repair, and Painting Certification Classes" offered by property owner associations like the East Bay Rental Housing Association (EBRHA), further attempt to bring awareness to these problems proactively.

Asthma

According to the 2014 Alameda County Community Health Assessment[i], Oakland has the highest rate of both asthma and childhood asthma in Alameda County. Asthma is the leading cause of hospital stays for young children in Alameda County, causing missed school days, missed work days, and stress for both the child and parent.

While not all cases of asthma are caused by housing habitability, poor housing conditions can trigger asthma attacks prompting emergency room visits and hospitalization. As seen in the Tables 8 and 9 below, Oakland has the highest rate of asthma-related emergency room visits and the second highest for children under the age of five (5) in Alameda County.

Table 8. Asthma ER Visits By City

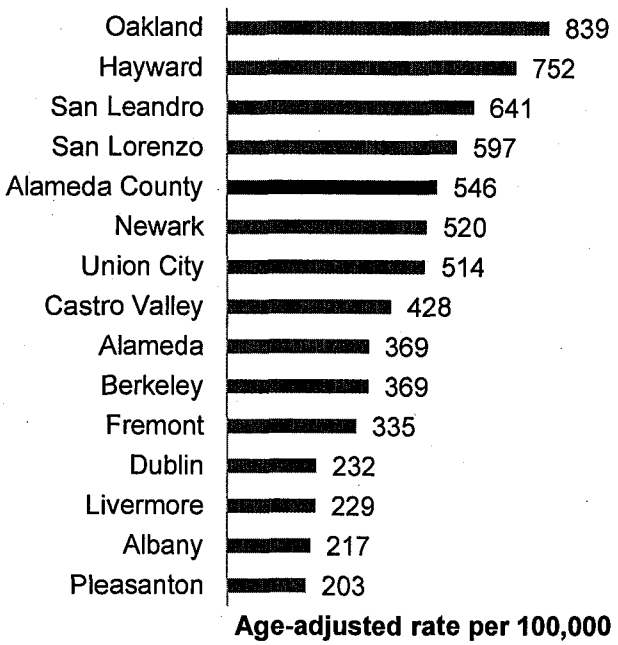
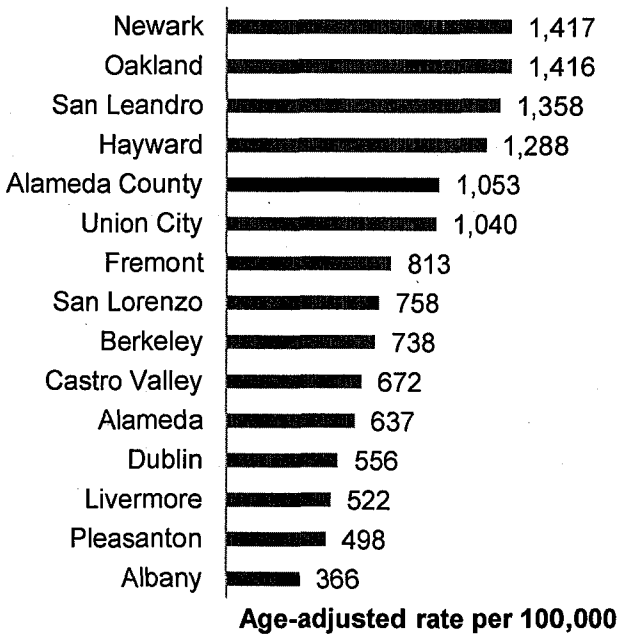


Table 9. Asthma ER Visits Ages <5 By City



Source: Alameda County Public Health Department, OSHPD Files 2012-2014

Table 10. Asthma ER by Race

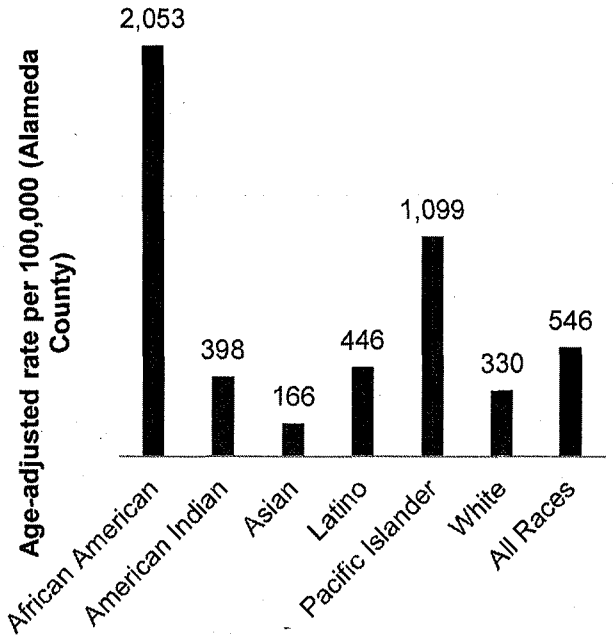
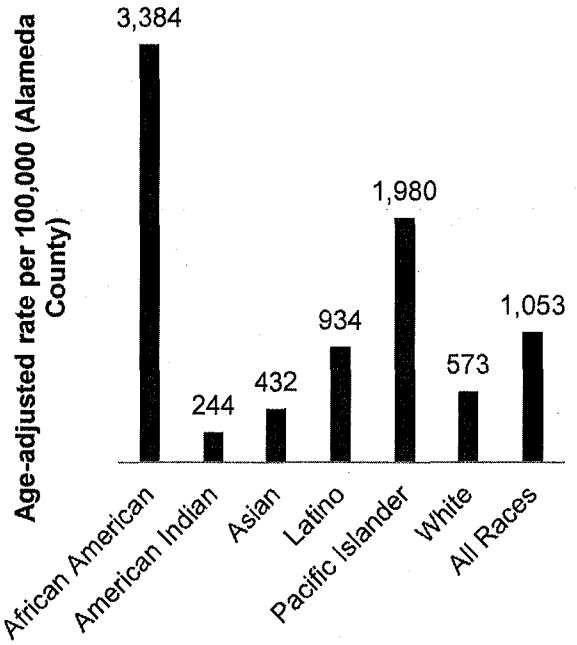


Table 11. Asthma ER by Race Age <5



Source: Alameda County Public Health Department, OSHPD Files 2012-2014

When race and income are taken into account, it becomes clear that asthma disproportionately impacts African American communities. As seen in Table 10 and Table 11, African Americans have highest rate of asthma-related emergency room visits rate, 3.7 times higher than the county average. For African American children under the age of five (5), that asthma-related emergency room visit rate is 3.2 times greater than the county average.

Like lead, significant efforts have been made to address asthma, especially for children under age 5. Through the Oakland Health Housing Partnership (OHHP), the City has partnered with Alameda County to case conference units with severe habitability problems. Through OHHP, the City works with the County to identify high risk properties with housing habitability issues and children less than age six (6). Participants work together on these cases making sure that the proper City or County resources are directed to help resolve the case.

The recent addition of mold and mildew as enforceable condition in the State Health and Safety Code provides an additional authority for City officials to enforce these asthma triggers. However, additional training, protocols, and equipment would be needed to help better identify and abate mold- and mildew-related issues.

Staff Findings

Based upon this analysis, the highest rates of habitability issues in Oakland are found in properties with five (5) or fewer units located in the Fruitvale, San Antonio, Castlemont, Havenscourt, and Hoover/Foster neighborhoods. While many of the reported code enforcement complaints are regarding exterior conditions, the AHS based housing conditions and reported

health outcomes are related to interior conditions.

Given the fact that the highest rates of habitability issues in Oakland are more frequent in smaller properties, staff recommends that a pilot PRI program in Oakland should concentrate on smaller buildings in the five (5) neighborhoods listed above. Additionally, a pilot PRI program should inspect both interior and exterior conditions including mold, mildew, and lead hazards.

3) Policy Considerations

Program Fee

As seen in the comparison chart found in Attachment B, all PRI programs reviewed by staff include a program fee. The program fee is necessary to recover program expenses. Each jurisdiction uses different methods in order to limit program costs. Staff believes it unlikely any PRI program would be entirely cost-recovering in Oakland. Further analysis and direction from City Council is needed to determine if a per unit or per building program fee should be used for PRI pilot program and how staff should account for housing safety concerns which may not be cost recovering.

Sacramento's RHIP uses their self-certification program to lower city inspection costs by allowing property owners to inspect units after an initial city inspection. RHIP charges an initial inspection fee of $127 for each new rental unit inspected by the program or subsequent city inspections, and $16 per unit for every year after that initial inspection.

San Jose's PRI program uses their tiered system to incentivize timely abatement and passes on added inspection charges to recalcitrant property owners. San Jose charges annually:

- $25.93 per unit for Tier 1 properties
- $58.60 per unit for Tier 2 properties
- $116.91 per unit for Tier 3 properties

In addition to these fees, San Jose charges $19.29 per unit for rent-controlled units and $1.98 per unit for non-rent-controlled units. If a re-inspection is necessary, there is an additional $255.36 fee for that inspection.

Los Angeles SCEP maintains a lower fee by spreading program costs across all units. SCEP charges $43.32 per unit annually and if a re-inspection is necessary there is an additional $201.50 per unit fee. Additional fees are charged for Complaint Inspections ($201.50) and Case Management ($201.50), if required.

Displacement

There are several possible mechanisms for displacement due to a PRI program including the loss of rental units due to: unregistered units, uninhabitable units, and tenant violations creating uninhabitable living conditions. Displacement can also be caused through increased property owner harassment in retaliation for tenants working with City Fire or Code Enforcement officials or through owner's reporting undocumented residents to immigration authorities.

City action to protect tenant health and safety may result in declaring building violations that would result in temporary tenant relocation. In Table 12, staff estimated the number of potential

relocation and associated costs for the relocation for a citywide PRI program

Table 12: Relocation Costs

	Calculations	
# of Units reporting Severely Inadequate Conditions	A	1,207
Assumption: Units that Require Relocation*	B	25%
Number of Units needing Relocation	C= A x B	302
Cost of Relocation per Unit	D	$ 12,374
Total Estimated Cost of Relocation**	E= C x D	$ 3,733,855

* Staff assumed that a quarter of all units reporting severely inadequate conditions require relocation.
** While Oakland's relocation costs vary, staff conservatively estimated that all relocations would incur the greatest relocation fee.
Sources: ZADEQ Score, American Housing Survey 2011

Staff conservatively assumed 25 percent of properties reporting severely inadequate conditions in the 2011 AHS would require relocation, and used the highest allowed per-unit amount for code enforcement relocation assistance. Staff estimated a total cost of $3.7 million for units requiring tenant relocation.

In some instances, there may be tenants whose behavior creates serious health and safety concerns. In cases of hoarding or disability-related violations, there is no easy answer. Code officials can reach out to Adult Protective Services for assistance. In other cases, property owners may be able to evict tenants because of damage to the unit. However, tenants with disabilities are protected under the Fair Housing Act. The extent to which these protections are enforced is unclear.

In addition to tenant displacement, owner intimidation and retaliation are concerns. Owner retaliation will always be an issue, but proactive targeting of properties means that property owners should know that tenants did not call for enforcement. In instances where owner intimidation or retaliation is suspected, it is imperative that code enforcement utilize support from non-profit and government agencies during inspections to provide on-site assistance when needed.

"Mom and Pop" Property Owners

A potential increase in code enforcement may place an added burden on small property owners, who own relatively few properties and may not have the capital necessary to perform improvements. The City of Los Angeles provides additional resources to these individuals to help them make the necessary improvements or cover relocation expenses. Los Angeles identifies these "Mom and Pop" property owners as: individuals who owns, "no more than four units of residential property and a single-family home on a separate lot" (LAMC 151.30.E).

Staff estimated potential properties which may fall under this description using the Alameda County Assessors Data.

Table 13. "Mom and Pop" Properties in Oakland

	Building Size (Buildings)					
Parcels Owned	SFH (Rental)	SFH (Owner Occupied)	2-Units	3- Units	4-Units	**Total (Units)**
One Single Family Home Rental Owned	6,555	-	-	-	-	**6,555**
One 2-4 Unit Building	-	-	3,462	1,015	1,411	**15,613**
Two Parcels (1 SFH + 1 Other Less than 5 Units)	-	1,715	35	2	-	**1,791**
Total (Units)	**6,555**	**1,715**	**6,994**	**3,051**	**5,644**	**23,959**

Based upon Table 13, staff estimates that there are approximately 22,250 rental units in 12,500 buildings in Oakland owned by property owners meeting the "mom and pop" classification. Approximately 30 percent of these units are in single family homes.

As staff found in the previous section, habitability issues are more likely in smaller buildings. Because of this finding, staff further estimated the potential maintenance costs of lead and mold. The purpose of this analysis was to understand the potential cost that may get placed on "mom and pop" property owners with increased enforcement. Tables 14 and 15 below provide estimated abatement maintenance costs of all estimated lead and mold incidences. These estimates are based on looking at all rental units in Oakland, and not just units owned by "mom and pop" owners.

Table 14: Maintenance Costs: Lead Abatement

	Calculations		
Baseline rate of Significant LBP Hazards in US- West	*A*		27%
Number of units in Oakland	*B*		95,402
Number of units with lead paint	*C = A x B*		25,759
Average per unit costs for abatement	*D*	$	2,000
Total Estimated Maintenance Costs	*E = C * D*	$	51,517,080

Sources: American Housing Survey (2011); City of Oakland; Urban Strategies Council; U.S. Census Bureau, 2013 American Community Survey, Tables B25024 and B25033. National Survey of Lead and Allergens in Housing, HUD 2001. People Vs. Atlantic Richfield Company et.al., Superior Court of California

Table 15: Maintenance Costs- Mold Abatement

	Calculations		
Baseline rate of mold in MSA	*A*		6.05%
Number of units in Oakland	*B*		95,402
Number of units with mold problems	*C = A x B*		5,772
Percent of mold problems that are minor	*D*		70.24%
Percent of mold problems that are major	*E*		29.76%
Cost of fixing minor problems	*F*	$	500
Cost of fixing major problems	*G*	$	6,000
Estimated Total Minor Maintenance Costs	*H = C x D x F*	$	2,027,009
Estimated Total Major Maintenance Costs	*I = C x E x G*	$	10,306,823
Total Estimated Maintenance Costs	*J = H + I*	$	12,333,832
Estimated Cost per Unit	*K = J / C*	$	2,137

Sources: American Housing Survey (2011); City of Oakland; Urban Strategies Council; U.S. Census Bureau, 2013 American Community Survey, Tables B25024 and B25033.

As seen in Table 14, $2,000 per unit to abate lead is estimated by the Superior Court of California. If the City were to completely abate all instances of lead in rental housing units in Oakland, staff estimates a total cost of $51.5 million. For mold, staff estimates an average cost of $2,150 per unit to abate with a total cost of $12.3 million to abate all instances of mold.

POLICY ALTERNATIVES

Staff modeled four (4) pilot PRI program scenarios. These scenarios were based upon the staff findings regarding successful PRI programs and concentrating on areas with reported elevated blood lead levels (BLL).

- **Scenario 1:** 10 percent of all rental units in zip codes with BLL above 7 percent: 94601, 94606, 94605, 94607
- **Scenario 2:** 10 percent of all rental units in zip codes with BLL above 6 percent: 94601, 94606, 94605, 94607, 94621, 94608, 94538, 94603
- **Scenario 3:** 10 percent of buildings with nine (9) or fewer rental units in zip codes with BLL above 7%: 94601, 94606, 94605, 94607
- **Scenario 4:** 10 percent of buildings with nine (9) or fewer rental units in zip codes with BLL above 6 percent: 94601, 94606, 94605, 94607, 94621, 94608, 94538, 94603

Table 15. Summary of Pilot PRI Program Scenarios

Position	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Estimated Units	3,800	7,000	3,100	3,700
Staffing	$ 1,028,476	$1,482,275	$ 933,391	$1,014,893
Outreach & Education*	$ 480,000	$ 800,000	$ 410,000	$ 470,000
Annual Non-Staffing Costs	$ 100,550	$ 107,750	$ 98,975	$ 100,325
Total Estimate Costs	**$ 1,609,026**	**$2,390,025**	**$1,442,366**	**$1,585,218**
Per Unit	**$ 423**	**$ 341**	**$ 465**	**$ 428**

Timing

Currently, the infrastructure is not in place to immediately launch a pilot PRI program. Staff estimates that for all scenarios, the best case scenario would take up to six (6) or eight (8) months to finalize the program design, select properties, hire staffing, and provide the necessary inspection training. If approval was given for a pilot PRI program for the FY 2017-2019 biennial budget, staff estimates a pilot PRI could begin in early 2018 (FY 2017-2018) and operate for one year.

Scenario Descriptions

Scenario 1 assumes that a pilot PRI program would inspect 10 percent of all rental units in zip codes with reported BLL above 7 percent. These zip codes would include 94601, 94606, 94605, and 94607. Staff estimates that there are approximately 38,000 rental units in these zip codes, roughly 40 percent of all rental units in Oakland. Based upon this model, staff estimates a program cost of $1.6 million or $423 per unit. Attachment F summarizes these costs associated with all scenarios, including Scenario 1.

Scenario 2 assumes that a pilot PRI program would inspect 10 percent of all rental units in zip codes with reported BLL above 6 percent. These zip codes would include 94601, 94606, 94605, 94607, 94621, 94609, 94538, and 94603. Staff estimates that there are approximately 70,000 rental units in these zip codes, roughly 74 percent of all rental units in Oakland. Based upon this model, staff estimates a program cost of $2.4 million or $341 per unit. Attachment F summarizes these costs associated with all scenarios, including Scenario 2.

Scenario 3 assumes that a pilot PRI program would inspect 10 percent of rental units in buildings with nine (9) or fewer rental units in zip codes with reported BLL above 6 percent. These zip codes would include 94601, 94606, 94605, and 94607. Staff estimates that there are approximately 31,000 rental units in these zip codes, roughly 33 percent of all rental units in Oakland. Based upon this model, staff estimates a program cost of $1.44 million or $465 per unit. Attachment F summarizes these costs associated with all scenarios, including Scenario 3.

Scenario 4 assumes that a pilot PRI program would inspect 10 percent of rental units in buildings with nine (9) or fewer rental units in zip codes with reported BLL above 6 percent. These zip codes would include 94601, 94606, 94605, 94607, 94621, 94609, 94538, and 94603. Staff estimates that there are approximately 37,000 rental units in these zip codes, roughly 39 percent of all rental units in Oakland. Based upon this model, staff estimates a program cost of $1.6 million or $428 per unit. Attachment F summarizes these costs associated with all

scenarios, including Scenario 2.

Pilot Program Design

For each scenario, staff assumed the following design for the pilot programs:

- Pilot would last one (1) program year; and
- Full interior and exterior habitability inspections, including fire risk, lead, and mold screening.

Direct Staffing

Direct staffing refers to staff working on day-to-day operations. For all scenarios, staff assumed that one (1) Project Manager would need to be hired. This role would oversee the implementation and design of the pilot program.

For code inspectors, staff conservatively estimated that one Special Combination Inspector could inspect 1,000 units per year. This estimate is based upon similar inspection rates seen during Oakland's SHIP pilot and in Sacramento's SCEP. In addition, in the estimated staffing costs, staff assumed a ratio of one (1) Senior Special Combination Inspector for every three (3) Special Combination Inspectors.

Indirect Staffing

Indirect staffing refers to an increase in staff workload for individuals not working on the program day-to-day operations. For all scenarios, staff assumed the following:

- One (1) FTE Administrative Assistant I would be required to assist with program administrative responsibilities, including inspection scheduling, program notification mailing, and coordination with community health workers and tenant and property owner advocates;
- One (1) FTE Account Clerk III would be required to assist with budgetary requirements and potential fee collection resulting from unabated code violations;
- One (1) FTE City Attorney would be required to assist with potential legal issues;
- One (1) FTE Paralegal would be required to assist the City Attorney.

Outreach & Education

As previously described, extensive community outreach and the inclusion of Community Health Workers in PRI programs are crucial to successful programs. Staff assumed that as part of a pilot PRI program, the City would issue competitive grants to help fill these roles.

For Community Health Workers, staff assumed that for each inspector, one (1) Community Health Worker would be paired. Staff assumed a grant contract amount of $100,000 per Community Health Worker. Community Health Workers would be responsible for reaching out to property owners and tenants prior to an inspection, as well as providing onsite services during inspections.

For all scenarios, staff assumed two (2) competitive grants ($50,000 each) for outreach and education. One (1) grant would be for tenants' outreach and education and one (1) for property owners' outreach and education. As part of these grants, grantees would help assist with PRI

program design and education and trainings regarding the PRI program.

Non-Staffing Costs

Non-staffing costs refer to program expenses related to materials. Since a pilot PRI program would require new infrastructure, staff assumed that new materials would need to be acquired. For all scenarios, staff assumed the following:

- $50,000 for Software licenses; and
- $15,000 for miscellaneous including printing costs and mailing expenses

To cover supplies and equipment, Staff assumed $1,000 for each estimated FTE. This line item would include supplies and equipment such as cell phones and moisture meters for inspectors. Staff also included $1,250 for each estimated FTE to cover computer costs.

FISCAL IMPACT

This is an informational report requiring no action. Any decisions about new programs would require additional resources as described in the report and should be accomplished through the budget process.

PUBLIC OUTREACH / INTEREST

As described in the **Analysis** section, a crucial element of any successful inspection program is empowering tenants and property owners to understand this issue and their rights/obligations. Tenants and property owners are the front line of identifying the major habitability issues PRI programs are not able to inspect. However, often the tenants facing the biggest issues of substandard housing are the ones with the least access to assistance from the City and Non-Profits. Because of this dichotomy, the biggest benefit this program can have is connecting tenants to these services.

Furthermore, advocacy groups and City services can be utilized during inspections, when need for on-site services are anticipated. Advocacy groups act as safeguards to protect tenants from owner intimidation and threats of retaliation. This protection is critical to building tenant trust and empowering the tenant.

COORDINATION

Staff worked with the following agencies in compiling the necessary data and cost estimates for this analysis:

- Alameda County Public Health Department
- Alameda County Health Homes Division
- Alameda County Vector Control

SUSTAINABLE OPPORTUNITIES

Economic:

- Preserve and improve the housing stock in the City of Oakland;
- Improve health outcomes in children and adults reducing emergency room and hospitalization costs, and missed work and school days.

Environmental:

- Mitigate lead hazards and adverse environmental impacts resulting from existing rental housing;
- Encourage cohesion and vested interest while encouraging owners to invest in the housing stock of the City.

Social Equity:

- Improve the landscape and climate of Oakland's neighborhoods by encouraging long-term tenancies in rental housing;
- Improve housing quality in communities of color and low income and moderate income households.

ACTION REQUESTED OF THE CITY COUNCIL

Receive an Informational Report on Creating a Proactive Rental Inspection Pilot Program to Address Housing Habitability Concerns that Concentrates on Areas of the City that Pose the Highest Risk for Childhood Lead Poisoning and Proposals for Funding Consideration for the FY 2017-2019 Budget.

For questions regarding this report, please contact Ethan Guy, City Administrator Analyst, at 510-238-6454.

Respectfully submitted,

Claudia Cappio
Assistant City Administrator,
City Administrator's Office

Reviewed by:
Kiran Jain, Chief Resilience Officer
City Administrator's Office

Prepared by:
Ethan Guy, City Administrator Analyst
City Administrator's Office

Item: _____
CED Committee
April 11, 2017

Attachments (7):

Attachment A: Performance of SHIP During the First Program Year
Attachment B: Comparison of Proactive Rental Inspection Programs in California Cities
Attachment C: *An Analysis of Proactive Rental Inspection Policies in California, Fall 2014*
Attachment D:*An Analysis of Proactive Rental Inspection Policies in California, July 2, 2014*
Attachment E: *Building and Indicator Base for Healthy Housing Issues in Oakland*
Attachment F: Full Descriptions of PRI Policy Alternative Scenarios
Attachment G: *Proactive Rental Inspections in Oakland, CA: A Benefit-Cost Analysis*

[i] Alameda County Health Data Profile, 2014: www.acphd.org/media/395851/acphd_cha.pdf

Attachment A: Performance of SHIP During the First Program Year

Table 1. SHIP Program Performance Program Year 1 (November 2015 – December 2016)

	Deficiencies Identified	Units Inspected	Units in Building	Buildings
Fire Department Inspections				
Performed	-	1,197	1,268	138
Fire Deficiencies	795	-	993	105
Satisfied*	162	-	255	29
Unsatisfied	633	-	923	97
OFD Referrals to Code	-	76	76	28
Tenant Referrals	-	-	3	2
Code Enforcement Inspections				
Performed**	-	66	66	31
Abated	-	13	13	6
Non-Actionable	-	36	36	17
Closed	-	17	17	8
Pending	-	15	15	7

* 'Satisfied' indicates deficiencies that were abated between the time an inspection was performed and the deficiency report was written. Property owners are given 30-days to abated deficiencies from the date the deficiency report is issued. Because of this, the number of Satisfied deficiencies is likely higher as property owners have had additional time to abate, however numbers were not yet available at the time of this report.
**Includes 2 Violations Identified by Planning & Building in follow-up inspections.

Based upon **Table 1**, OFD performed inspections of 1,197 total units in 138 buildings. In 105 buildings—or 76% of buildings—OFD identified a total of 795 fire or life safety deficiencies. OFD had a referral rate to the Building department of six percent (6%) for all units inspected. In total 81 cases were opened by Building, including two units with violations identified during follow-up Building inspections. Currently, 66 cases have been inspected and 15 cases are still pending investigation. Of the 66 cases Building inspected, 54% of cases were non-actionable, 26% were closed, 20% were abated.

Not reflected in Table 1 are the re-inspections of the buildings with deficiencies. All buildings that received deficiencies would have received at least one re-inspection by OFD to verify the deficiencies have been abated. OFD is still in the process of re-inspecting buildings with deficiencies.

Note: OFD tracks deficiencies at the building level. Because of this 795 is likely a low estimate of the total number of deficiencies within a building, as one deficiency may apply to multiple units. Additionally, there is a wide range of severity between deficiencies—ranging from extension cords on the ground to hazardous and flammable materials. For the most severe deficiencies (inaccessible fire exits, broken or missing fire alarms, etc.), OFD inspectors attempt to perform re-inspections within 3 days of identifying the deficiency.

Attachment B: Comparison of Proactive Rental Inspection Programs in California Cities

	City of San Jose	City of Sacramento	City of Los Angeles	City of Long Beach	City of Fresno
Program Name	Multiple Housing Inspection Program	Rental Housing Inspection Program (RHIP)	Systematic Code Enforcement Program (SCEP)	Proactive Rental Housing Inspection Program	Rental Housing Improvement Act
Municipal Code Section	San Jose MC 17.20.500 et seq.	Sacramento MC 8.120 et seq.	Los Angeles City Council Ordinance No. 172,109	Long Beach MC 18.30 et. seq.	Fresno MC Chapter 10.16 et. seq, (enacted 2/9/17)
Properties Covered	3 or more units apartment buildings. Also includes: emergency residential shelters, guesthouses, motels/hotels, residential care facilities for more than 7 people, residential service facilities, and fraternity and sorority houses.	All Residential Rental Properties are covered	All residential rental properties with two (2) or more units	4 or more units. All units are required to register within 60 days of November 1st. Also includes: Boarding Schools, B&Bs, Hotels & Motels	All Residential Rental Properties are covered
Eligibility requirements for exemptions from inspection	Single Family Homes, Duplexes. Owner-Occupied Units	Owner-occupied units, properties five years old or less, properties in escrow (for sale) or units that are routinely inspected by other local agencies.	Owner-occupied units	Owner Occupied Units. Buildings with fewer than 4 units	Owner Occupied, Properties less than 10 years old.
Building targeting scheme	Based on Code Records: Tier 1- No violations, Annual Self-Certify Inspections Tier 2- 1 violation per unit Tier 3- 2 violations per unit	If a unit fails an inspection while in the Self-Certification Program, they are automatically inspected the next year.	N/A	No less than 10% of all units on property are inspected.	Baseline Inspection: One Unit- 100% Inspected 2-4 Units- 50% Inspected 5-15 Units- 25% Inspected 15-50 Units- 15% Inspected 51+: 10% Inspected Owners who own multiple SFH can receive reduced percentage of homes inspected. On-going: Tier 1- Passed Initial Inspection, Professionally managed properties, Annual Self-Certify Inspections Tier 2 & 3- Fail Initial Inspect
Inspection Coverage	Exterior and interior, full inspection. Inspection Includes all of the provisions of the state housing law and this Code which are applicable to the proposed use of the building including, but not limited to, provisions relating to construction, maintenance, sanitation, ventilation, use and occupancy of the building, zoning, and fire.	Exterior and interior, full inspection. Inspection includes: premises, exterior walls, ventilation, stairway/landing/treads/risers, roof and ceilings, lighting, electrical, common areas, entry doors, windows, and window locks, heaters, kitchen counters and sink surfaces, floor coverings, plumbing, water heaters, smoke/carbon monoxide detectors.	Exterior and interior, full inspection. Inspection includes: fire and safety code regulations, housing habitability code regulations, building code/electrical code/ plumbing code/ heating and ventilation code requirements, health code regulations.	Exterior and interior, full inspection. Inspection includes: fire and safety code regulations, housing habitability code regulations, building code/electrical code/ plumbing code/ heating and ventilation code requirements, health code regulations	Exterior and interior. Health and safety violations, Cooling/Air Condition, Smoke and Carbon Monoxide Detectors.
Frequency of inspection	Tier 1- 6 year cycle , 10% audited by city annually Tier 2- 5 year cycle , proactive Inspection of 25% of units Tier 3- 3 year cycle, proactive inspection of 50% of units	All units every 5 years; Landlords are allowed to opt into Self-Inspection Program after a passed initial inspection; 10% of Self-Certified Units are randomly inspected every year.	4 year cycle listed on ordinance (took 7 years for the first cycle)	"Periodic"	Tier 1- 10% audit of all self-certified units annually after 5 years Tier 2- 2- year cycle, all units Tier 3- All units every year

Number of units and properties covered in City	Approx. 4,400 properties, 6,600 buildings, 85,000 units	~89,500 units	~817,000 units	~67,500 units	~85,000 units
Percentage of Units Inspected	50% in 3-10 unit buildings, 25% of 11-50 unit buildings, 10% if building has 50+ units	10% of Self-Certified Units annually; All newly registered units	100%	At least 10% of units in 7,500 parcels.	10% of Self-Certified Units annually; All newly registered units
Annual registration or permitting fee	Tier 1: $25.93 per unit Tier 2: $58.60 per unit Tier 3: $116.91 per unit	$16 annually per unit; $127 for initial inspection per unit	$43.32 per unit	4-10 Units: $230 per parcel 11-20 Units: $260 per parcel 21+ Units: $290 per parcel	Fee not to exceed $100 per unit
Reinspection fee structure	$255.36	$127 per unit	$201.50 per unit	$205 per unit	TBD
FTE inspectors	11 FTE	5 FTE (2013)	79 FTE (2013)	9 FTE	7 FTE Senior Community Revitalization Specialists 2 FTE Community Revitalization Specialists
Properties inspected annually	Average 343 properties inspected per inspector per year (Range: 606-129). Half were proactive. Approx. 12,000 units inspected in 2012-13.	~8,950 units through random inspection	Approx. 180,000	Approx. 9,900 (1,100 per inspector)	TBD
Annual Budget Info	Approx. 3 million, budget surpluses recently due to unfilled information.	Approx. $7.5 million (Code Enforcement Budget)	Approx. $35 million	Est. $4.35 million	TBD
Tenant Information	Tenants are not informed of code violations, nor are they informed that an inspection has taken place or when it is scheduled for.	Roles and Responsibilities form signed by both tenant and landlord; tenant has copy of self-certification results	Significant Government and Advocate outreach	Brochures and Public Health outreach	TBD

Attachment C

An Analysis of Proactive Rental Inspection Policies In California

ETHAN GUY AND ALEX MARQUSEE
EDITED BY KATE GLASSMAN, CRISTIAN UGARTE, JULIE STABILE, ANN HOLLINGSHEAD, FELIX OWUSU

Proactive Rental Inspection (PRI) programs seek to protect vulnerable tenants from unsafe living conditions by systematically and preemptively inspecting rental units for code violations. This report evaluates the effectiveness of PRI programs in California cities in reducing serious code violations and investigates whether PRI programs impact rates of landlord retaliation, rental costs, and tenant displacement. This report uses a mixed methods approach with qualitative case studies and regression analyses. We use a series of fixed effects regressions to isolate and quantify the impacts of a unit's inclusion in a PRI program. In addition, we rely on official program documents and interviews with program stakeholders for information on PRI program impacts and best practices for program design and implementation. Our quantitative findings suffer from a lack of power to identify the association between PRI programs and habitability issues and changes in rent. Our qualitative findings suggest that PRI programs reduce serious habitability issues when they are fully staffed and when both the interior and exterior of the units are inspected. PRI programs offer a budget neutral mechanism for cities to address safety and habitability issues in rental housing. However, they may also increase tenant displacement in jurisdictions without relocation provisions, capital pass through limits, and other rent control protections.

With California housing costs continuing to rise, many families must consider the difficult tradeoff between housing quality and affordability. In past years, whole families have died after fires caused by exposed electrical wirings combined with a lack of egresses. With alarming regularity, families live among chipping lead paint and mold, leading to high rates of lead poising and asthma for children. When such unsafe conditions affect tenants of rental properties, children and families bear the cost of a landlord's inability or unwillingness to maintain the property. Predictably, vulnerable populations face these risks disproportionately.

Unfortunately, cities are forced to rely primarily on building code enforcement to mitigate the frequency of these tragedies. Municipal code inspectors regulate landlords to enforce legislation ensuring minimum housing quality through citation and legal action. There are two reasons that an inspector would traditionally visit a property: to respond to a tenant's formal complaint requesting an inspection, or to verify building code compliance in a newly constructed unit or a unit receiving major retrofits.

These complaint-based inspection programs can have serious equity ramifications affecting the most vulnerable of our communities. In jurisdictions with poor tenant protections, landlords are able to exploit this system by using intimidation and fear tactics to prevent their tenants from filing complaints. Additionally, many residents may not be aware of these services or protections provided.

To remove this responsibility from tenants' shoulders, many cities have added proactive inspection policies, which seek to inspect rental units on a regular basis, in addition to traditional complaint-driven programs. Many tenants' advocates are concerned that PRI programs will increase housing costs, push landlords to convert units to condos, or result in the displacement of tenants. This paper evaluates these claims and considers whether PRI programs achieve their goals of improving housing quality without serious costs to tenants.

First, we introduce PRI program design, looking at four major California cities as examples. Next, we review our methodology for evaluating the effectiveness of PRI programs, compared to traditional complaint-based programs. Then, we present the findings from our analysis. Our last section concludes and presents our recommendations for future work.

PRI PROGRAM DESIGN

PRI Program Overview

Proactive Rental Inspection (PRI) programs represent an added layer of enforcement on top of traditional, complaint-driven code inspections. In a PRI program, all rental units with the program receive an initial inspection. Generally, PRI

programs inspect the interior and exteriors of all units, looking primarily for fire hazards and substandard living conditions. Following this initial assessment, PRI inspectors visit a subset of the rental housing stock each year, either through random or targeted selection to verify program compliance and inspect all units during a multi-year cycle. Landlords pay for the increased workload through annual fees, which they are generally allowed to pass on directly to tenants.

This section describes the four PRI programs evaluated for this paper:

- The City of San Francisco Health Housing and Vector Control Program
- The City of Sacramento Residential Housing Inspection Program
- The City of Sacramento Residential Housing Inspection Program
- The City of San Jose Multiple Inspection Policy
- The City of Los Angeles Systematic Code Enforcement Program

The City of San Francisco Healthy Housing and Vector Control Program

The San Francisco Healthy Housing and Vector Control program aims to inspect all hotel rooms and the exteriors and common areas of all multi-family housing units in the city limits every three years. An increasing vector (rats, cockroaches, bed bugs, etc.) problem prompted the adoption of this program, and inspections target areas that may be suitable environments for vectors. This PRI program is not technically a true PRI program that aims to improve overall housing quality, because of its limited scope and because it excludes individual rental units. San Francisco also maintains a separate complaint-driven system for all housing units, but there is little overlap between inspectors or inspections.

The program inspects the common areas of over 15,000 units every three years with 2.5 full time equivalent (FTE) inspectors. It also charges landlords based on a fee schedule that varies with the size of the building. Inspectors notify landlords of an impending inspection at least ten days before the scheduled inspection. Landlords are not required to notify tenants of these inspections, however, because inspectors only examine the exteriors and common areas of multi-family buildings and hotel rooms.

The City of Sacramento Residential Housing Inspection Program

The Sacramento Residential Housing Inspection Program uses a self-certification program where landlords of all rental units perform their own inspections annually and report compliance to the city. To ensure that landlords do not cheat on inspections, the city annually inspects a randomly selected 10 percent of self-certified units. If a unit fails this inspection, the city removes the unit from the self-certification program and conducts a mandatory inspection in the subsequent year. While the City of Sacramento established this program in 2008, the County of Sacramento has had a less aggressive program in place since 1993.

The City of Sacramento's program functions with only five building inspectors and administrative support staff, and it requires a "local contact representative." This individual must live within thirty-five miles of the Sacramento area, be available for inspections, and respond to notices on the owner's behalf. The program also requires a tenant's rights form to be provided to the tenants prior to occupancy.

The City of San Jose Multiple Inspection Program

The San Jose PRI program aims to inspect all rental properties with three or more units over a six-year cycle. These inspections overlap with a complaint-driven inspection process completed by the same officials. Inspectors enforce a minimum habitability standard through enforcing building and housing codes and can issue administrative citations for unsafe or unhealthy conditions. The PRI ordinance also includes a relocation payment provision for tenants that both protects tenants from displacement and incentivizes landlords to prioritize fixing code violations instead of selling the property. For temporary relocation (fewer than sixty days), the owner is responsible for providing similar housing at no additional cost to tenants. In the case of long term (greater than sixty days) or permanent relocation, the owner is responsible for approximately three months' rent.

Currently, San Jose officials, the city council, and local stakeholders are working to change the proactive targeting scheme to allow for the self-certification of low-risk buildings so that inspections can focus on more problematic properties. Buildings with low numbers of violations that are resolved quickly are allowed to self-certify, while other buildings are targeted by the city for more frequent inspections.

The City of Los Angeles Systematic Code Enforcement Program

The Los Angeles Systematic Code Enforcement Program aims to inspect each unit in all multi-unit rental properties over a four-year cycle. Buildings where the owner occupies one of the units are exempt from the program. Inspectors review the entirety of the building and all units in the building when inspecting a property. There are approximately 100 code inspectors responsible for over 800,000 units.

Another major component of the Los Angeles program

is relocation assistance provided to tenants who may be displaced as a result of substandard housing units. If a tenant is forced to relocate, landlords are required to provide financial assistance to the tenant based upon a calculation determined by the program. This amount can range from approximately $8,000 for a couple to nearly $20,000 for a family of four.

INVESTIGATION INTO THE IMPACT OF PRI PROGRAMS ON HOUSING QUALITY

OVERVIEW

In this section, we address our first research question: how have PRI programs affected housing quality over time? We employ a fixed effects regression to identify PRI programs' impact on housing quality. The first section introduces our data. The second section explains our methodology. The third section presents our qualitative findings and the results of our statistical investigation.

DATA

Our quantitative analysis uses a panel data set constructed from the American Housing Survey (AHS). The United States Department of Housing and Urban Development (HUD) and the Census Bureau administer the AHS, which tracks a sample of housing units over time. The AHS includes a large set of questions describing the state of America's housing stock. Unfortunately, the national AHS only sporadically includes an additional sample of Metropolitan Statistical Areas (MSA). As a result, we generally have only two or three observations for each MSA over the past twenty years. Table 1 summarizes the number of California rental units included in the various waves of the AHS by MSA that contain enough information for our analysis.

California AHS Data

Table 1: Years California MSAs Were Sampled by AHS – Rented Observations

MSA	Year Available: 2008-2011 (n)	Year Available: 2003-2007 (n)	Year Available: 1998-2002 (n)	Year Available: 1995-1997 (n)	Year Available: 1992-1994 (n)
Anaheim-Santa Ana	2011 (1,069)	X	2002 (1,336)	X	1994 (1,237)
Los Angeles-Long Beach	2011 (527)	2003 (1,099)	1999[6]	1995 (973)	X
Riverside-San Bernardino-Ontario*	2011	X	2002	X	1994
Sacramento	2011 (692)	2004 (908)	X	1996 (803)	X
San Diego	2011 (1,038)	X	2002 (1,330)	X	1994 (1,300)
San Francisco	2011 (1,025)	X	1998 (1,025)	X	1993**
Oakland	2011 (714)	X	1998 (714)	X	1993**
San Jose-Sunnyvale – Santa Clara	2011 (1,173)	X	1998 (1,534)	X	1993**

* Due to difficulty appending datasets over time and ensuring accurate imputation of the PRI variable, we have omitted the Riverside-San Bernardino-Ontario MSA from our analysis.
** The San Francisco-Oakland-Hayward was changed, starting with the 1998 sample, to not include Oakland, which was then sampled independently. We were unable to differentiate the MSAs. We are also unable to include data from the 1993 sample due to difficulties with a changed data structure.
X – Data are not available.

DEPENDENT VARIABLE: POOR QUALITY INDEX (PQI)

The Poor Quality Index (PQI) comprises a set of indicators of poor housing quality found in the AHS. The PQI serves as our primary outcome of interest, as it measures the serious threats to habitability that building code enforcement programs seek to improve. The PQI index includes thirty-five different indicators, which include, among others: exposed wiring, water leaks, holes in the floors or walls, evidence of rodents, plumbing or sewage breakdowns, cracked or crumbling foundations, and exterior blight.

The PQI weighs each indicator based on the relative importance it represents to overall poor housing quality. These weighted values are then summed into the index. A unit with a higher PQI has more problems, and a unit with a score of zero has no serious habitability problems. This is not a measure of housing quality but rather a measure of physical threats to health and safety of inhabitants. It is mostly stable over time nationally, although there appears to be a small trend in scores over time that is related to changes in the survey in 1997.

TREATMENT VARIABLE: PROACTIVE RENTAL INSPECTION PROGRAMS

Using the AHS data, we impute whether or not a PRI program covers a particular housing unit. Using data in Table 2 below, we create a dummy variable that is equal to one if a unit is covered by a program and zero otherwise. We impute this condition using a unit's location, the year of the observation, the number of units in the observation's building, and the age of the building. For instance, we designate a unit as covered by PRI if it is within San Jose's legal boundaries, the observation occurs after the implementation of the PRI program in 1998, the unit is in a building with three or more units, and the building is five or more years old at the time of observation. The following chart presents the authors' research into which cities in the California MSAs surveyed by the AHS have PRI programs. We believe this list exhaustively covers PRI programs operating within MSAs sampled by the AHS as of 2011.

METHODOLOGY

Table 2: PRI Programs in California

MSA	City	Year PRI Program Implemented	PRI Covered Housing Stock
Anaheim-Santa Ana	Santa Ana	1992	All rental units.
Los Angeles-Long Beach	Los Angeles	1998[1]	All rental units larger than single family homes.
Los Angeles-Long Beach	Long Beach	1998	All rental units larger than single family homes.
Riverside-San Bernardino-Ontario	San Bernardino City	1998	All rental units.
Sacramento--Arden-Arcade--Yuba City	Sacramento City	2008	All rental units.
Sacramento--Arden-Arcade--Yuba City	Sacramento County	1993	All rental units.
San Francisco-Oakland-Hayward	San Francisco City and County	2009	Covers rental buildings with three or more units in the City of San Francisco.
San Jose-Sunnyvale - Santa Clara	San Jose City	1998	Covers rental buildings with 3 or more units that were built more than 5 years prior to the time of inspection.

Our quantitative analysis employs a fixed effects model to identify variation in housing habitability issues that can be causally linked to the existence of a PRI program. Our data include observations before and after cities implemented their PRI programs. Some of the MSAs have no cities with PRI programs and some have one or two cities with a PRI program. Generally, the largest city in a given MSA will have a PRI program, and the outlying urban and suburban areas will not. Our model exploits variation in PRI coverage generated by the administrative boundaries of PRI programs to compare housing units within and without these boundaries to determine if the average degree of code violations has changed over time.

It is important to keep in mind that our outcome variable does not reflect a broad measure of housing quality. Rather, it measures the existence of serious threats to the habitability of a unit. These serious habitability issues are influenced by a combination of the landlord's investment and upkeep of the property, the quality of construction of the building, and the treatment of the unit by the tenants. PRI reflects a regulatory intervention targeting landlords who have not kept up their property. As a result, we expect that the existence of a PRI program will result in fewer habitability issues. Our hypothesis then is that jurisdictions with PRI programs have a lower average PQI compared to jurisdictions without PRI programs, all else equal.

The model below indexes housing units with i and time periods with t. Our basic fixed effects model is:

(1) $PQI_{it} = Alpha + ß1\ PRI_{it} + ß\ UnitFE_i + ß\ YR_t + c_i + Alpha(_{it})$

Where PQIit represents the constructed index of habitability issues for each particular unit (i) in time (t), Alpha is our intercept, PRIit is our explanatory variable of interest and is a dummy variable that is set to one when a housing unit is covered by a PRI program, UnitFEi is a vector of dummy variables for each household unit, and YRt is a vector of year dummy variables.

We rely on unit-level fixed effects to control for time-invariant unobserved characteristics of homes that may correlate with a jurisdiction's decision to adopt a PRI program. The time-invariant error term, ci, captures unobserved time-invariant variation in habitability issues between different housing units. There remains an idiosyncratic error Alpha(it). Standard errors are clustered at the individual household level since we assume that our household residuals will be closely correlated with each other over time.

We also include year fixed effects to account for underlying trends in PQI over time. Specifically, we observe some increases in habitability issues over time due to changes in the AHS in the late 1990s that systematically increased all PQI scores. These fixed effects also control for underlying declines in PQI, specifically those due to general dilapidation in houses and apartments over time. This concern is particularly relevant in our study, in which at least 60 percent of the rental units in each of our MSAs of interest are in buildings constructed before 1980. Most major building components have life expectancies below twenty or thirty years and so we expect an older housing stock to show increasing dilapidation regardless of PRI programs.

A potential source of bias in our model could arise if jurisdictions that enforce habitability through PRI are also becoming more affluent. In this scenario, landlords invest more in their properties in order to charge increased rent, or in response to complaints from higher income tenants who are less likely to fear landlord retaliation. Then, reductions in habitability issues are related to increasing rents instead of PRI programs.

To examine this source of potential bias, our second specification includes a control for contract rent. The AHS survey question on contract rent asks tenants to report the amount of money they spend on rent each month that pays for housing itself, excluding fees or utility costs. Landlords in jurisdictions with rent control provisions may try to charge tenants more by passing on the costs of water, garbage collection, or other fees instead of rent. We replicate our models that include a control for rent with the AHS variable

for total housing costs to check for this possibility, but find no differences.

(2) $PQI_{it} = Alpha + ß_1 PRI_{it} + ß_2 Rent_{it} + ß\ UnitFE_i + ß\ YR_t + c_i + Alpha(_{it})$

Another limitation may arise from treatment heterogeneity, as not all PRI programs are alike. Variation in requirements such as the depth of the inspection, the frequency of inspection, the size of the threatened or levied fines on negligent landlords, and a number of other factors differ between jurisdictions. In order to observe these differences between programs, we run a third regression that allows for varying impacts of different PRI programs on PQI. We add our control for rent in our fourth model.

(3) $PQI_{it} = Alpha + ß_1 PRI_{it}(San\ Jose) + ß_2 PRI_{it}(Santa\ Ana) + ß_3 PRI_{it}(Los\ Angeles\ and\ Long\ Beach) + ß_4 PRI_{it}(Sacramento\ City) + ß_5 PRI_{it}(Sacramento\ County) + ß\ UnitFE_i + ß\ YR_t + ß\ c_i + Alpha(_{it})$

(4) $PQI_{it} = Alpha + ß_1 PRI_{it}(San\ Jose) + ß_2 PRI_{it}(Santa\ Ana) + ß_3 PRI_{it}(Los\ Angeles\ and\ Long\ Beach) + ß_4 PRI_{it}(Sacramento\ City) + ß_5 PRI_{it}(Sacramento\ County) + ß_6 Rent_{it} + ß\ UnitFE_i + ß\ YR_t + ß\ c_i + Alpha(_{it})$

FINDINGS – QUALITATIVE RESULTS

INTERVIEWS WITH KEY INFORMANTS

After a review of published audits, program documents, ordinances, and newspaper stories, we spoke with code enforcement officials, tenants' rights advocates, and public interest lawyers to gather additional evidence on whether PRI programs work. These interviews were essential in identifying the mechanisms by which PRI programs affect unit quality, and how program design and other ordinances can protect or endanger tenant stability. We spoke with a head code enforcement official in each of the four major cities of interest (Los Angeles, San Jose, Sacramento, and San Francisco), tenant advocates in Los Angeles and San Jose, and a number of knowledgeable healthy homes advocates who work on California housing policy. Interviewees requested to remain anonymous.

FINDINGS

PRI programs offer an opportunity to increase a jurisdiction's capacity to enforce its building code without burdening its budgets. An increase in the number of building inspectors and inspections should result in better compliance with minimum safety and habitability standards, and so a decrease in PQI. Building code officials and tenant advocates alike agreed on this point. In cities with PRI programs, building code officials responded to fewer substantiated complaint-based inspections, and tenant advocates received fewer tenants with habitability concerns.

Furthermore, landlords are beginning to view PRI policies as beneficial. In the City and County of Sacramento programs, government officials have partnered with landlord associations to provide trainings on how to perform self-certification inspections. PRI programs are designed to punish only the worst landlords, whose tactics contribute to negative perceptions of the profession as a whole. In this regard, PRI programs function as a way to identify and punish recalcitrant landlords while improving the perception of landlords generally.

However, uneven implementation, a lack of staffing, or poor program design has hampered PRI program success in a few jurisdictions. For example, the San Francisco program is focused only on eliminating rodents from rental homes, and so the program has a limited potential to address other habitability issues. The Sacramento County program has not been aggressively enforced, and the San Jose program has suffered from limited funding and too few inspectors on staff. These concerns aside, program administrators from all jurisdictions report that the addition of code inspectors has resulted in increased enforcement and citations for negligent landlords. Tenant advocates in San Jose and Los Angeles report reductions in serious habitability issues due to this increased enforcement.

FINDINGS – QUANTITATIVE ANALYSIS

The following table presents the findings from our four models. We present regression coefficients first, followed by standard errors in parentheses. As we do not find any statistically significant findings at a 90 percent confidence level, we do not present p-values.

The results from the first model fail to find that PRI programs are associated with any change in serious habitability issues. The addition of a control for the level of rent also results in an insignificant association. This finding suggests that these programs do not have a consistent effect on habitability issues on average, likely as a result of the diversity of program design and quality of implementation.

Our next two models estimate each PRI program's impact separately, but we still fail to find any statistically significant results. This may indicate that our data have insufficient statistical power to precisely estimate effects of the magnitude observed. Including individual unit-level fixed effects means that we can only exploit within-unit variation, which may require more power than our dataset provides. Data issues prevented us from including Santa Ana or Sacramento County. We fail to find a statistically significant association between San Jose's or San Francisco's PRI programs and habitability

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
PRI_LALB			0.706	0.701
			(0.498)	(0.498)
PRI_Sac			-0.568	-0.549
			(0.491)	(0.491)
PRI_SanFran			0.403	0.410
			(0.786)	(0.787)
PRI_SanJose			-0.0430	-0.0721
			(0.832)	(0.832)
PRI	0.213	0.214		
	(0.306)	(0.307)		
Rent		-0.000266		-0.000258
		(0.000214)		(0.000214)
Constant	2.513***	2.680***	2.534***	2.697***
	(0.154)	(0.212)	(0.142)	(0.202)
Observations	17,379	17,379	17,379	17,379
R-squared	0.026	0.026	0.027	0.027
Number of controlarn	7,655	7,655	7,655	7,655
Household FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

issues with or without our added control for rent. This is not surprising given our qualitative understanding of the weak implementation of these programs

Our results for the City of Sacramento and Los Angeles do not support our qualitative findings that these programs have had an impact on reducing safety and habitability issues. We fail to find a statistically significant association between Sacramento City's program and PQI. This could be due to a lack of power or could suggest that the PRI program has had no marginal impact on PQI. We also fail to find a statistically significant association for the combined Long Beach and Los Angeles programs. We are unfortunately unable to differentiate the two jurisdictions in our data set to confirm qualitative findings that the LA program is fully staffed, inspects for all relevant habitability issues, and has had a substantial impact on habitability issues. We do not determine if the cause is a lack of power, the conflation of Los Angeles' and Long Beach's PRI programs, or the true absence of any impact.

INVESTIGATION INTO IMPACT OF PRI PROGRAMS ON HOUSING COSTS

OVERVIEW

The qualitative evidence presented above suggests that increasing the enforcement of a housing code through a PRI program improves the overall quality of housing as measured by a lack of serious habitability issues. In theory, increased enforcement could lead to higher quality housing units from which landlords would then request more rent. Many tenants' advocates fear that fees, citations, and repairs resulting from PRI programs will be passed on directly to tenants. This raises the possibility that governments may be improving housing quality at a cost to tenants. On the margin, this may displace some vulnerable tenants. In this section, we investigate whether or not PRI programs have caused any discernable increase in rental costs over and above normal market conditions.

California rents and housing prices have continued to increase well over the rate of inflation for the past fifteen years. Table 3 illustrates how many of our cities of interest have recently experienced some of the high demand among rental housing markets in the state.

In the following section, we present our methodology for isolating PRI programs' marginal contribution to the increase in rents. The subsequent section presents our findings.

Table 3: Indicators of Demand for Rental Housing in Major California Cities

City	Oakland	San Francisco	Los Angeles	San Jose	Sacramento	California Average
Vacancy Rate[a]	4.5	4.5	6.0	2.4	5.8	5.2
Annual rent increase (March 2014)[a]	10.8%	4.4%	1.9%	5%	3.1%	3.7%
Median Rent (March 2014)	$1580	$3500	$2000	$2380	$1100	$2076
Median Rent per square foot (March 2014)	1.6	2.8	1.7	1.8	0.9	1.34

METHODOLOGY

We employ a set of fixed effects regressions, similar to those in the earlier investigation into housing quality, except we now estimate the impact of PRI programs on the AHS variable for rent. Unit-level fixed effects are included to control for the large number of unobserved determinants of the price of housing that do not change over time. Including year fixed effects controls for the general increase in housing prices across California over the past two decades. Our explanatory variable of interest remains our imputed variable of a unit's inclusion in a PRI program.

In addition to rent, landlords may attempt to pass along the increased costs imposed by PRI programs through additional fees or by making tenants pay for their own utilities outside of rent. As a check for the robustness of our results, we also ran the same regressions on the AHS variable for total monthly housing costs. These models returned similar results so we do not report them.

MODELS

Our first models aim to identify any association between inclusion in any PRI program and rents. Our second model estimates the impact of individual PRI programs on rents.

(5) $Rent_{it} = Alpha + ß_1\ PRI_{it} + ß\ UnitFE_i + ß\ YR_t + ß\ c_t + Alpha(_{it})$

(6) $Rentit = Alpha + ß_1\ PRIit(San\ Jose) + ß_2\ PRIit(Santa\ Ana) + ß_3\ PRIit(Los\ Angeles\ and\ Long\ Beach) + ß_4\ PRIit(Sacramento\ City) + ß_5\ PRIit(Sacramento\ County) + ß\ UnitFE_i + ß\ YR_t + ß\ c_i + Alpha(_{it})$

Our last model includes our measure of serious habitability issues, PQI, as another check to the robustness of our results. PRI programs may be associated with increased rents because landlords pass along the fee levied by the jurisdiction. It may also be the case that stronger enforcement of building codes increases the quality of housing, so landlords charge more to recoup the costs of rehabilitation. Including the PQI variable controls for the change in rents associated with the change in number of serious habitability issues. Our interpretation for our variable of interest in this model changes to the impact of PRI programs on rents outside of any costs of rehabilitation passed onto tenants. However, this specification may not have much explanatory power due to the fact that PQI scores exhibit little variation and cluster near zero.

(7) $Rent_{it} = Alpha + ß_1\ PRI_{it}(San\ Jose) + ß_2\ PRI_{it}(Santa\ Ana) + ß_3\ PRI_{it}(Los\ Angeles\ and\ Long\ Beach) + ß_4\ PRI_{it}(Sacramento\ City) + ß_5\ PRI_{it}(Sacramento\ County) + ß_6\ Rent_{it}\ ß_7\ PQI + ß\ UnitFE_i + ß\ YR_t + ß\ c_{it} + Alpha(_{it})$

FINDINGS

The following table presents the findings from our four models. Coefficients are presented first, followed by standard errors in parentheses.

VARIABLES	(1) 5	(2) 6	(3) 7
PRI_LALB		-17.52	-17.12
		(18.29)	(18.30)
PRI_Sac		73.68***	73.35***
		(19.96)	(19.97)
PRI_SanFran		24.24	24.47
		(66.03)	(66.07)
PRI_SanJose		-112.7***	-112.7***
		(30.22)	(30.17)
PRI	4.648		
	(14.55)		
PQI			-0.571
			(0.475)
Constant	627.8***	628.7***	630.2***
	(7.738)	(7.738)	(7.789)
Observations	17,379	17,379	17,379
R-squared	0.492	0.492	0.493
Number of controlgrp	7,655	7,655	7,655
Household FE	YES	YES	YES
Year FE	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Our first model fails to find that PRI programs are statistically significantly associated with changes in rent after conditioning on individual household unit and time fixed effects. Our second model confirms that jurisdictions have had very different experiences with rent increases and PRI programs. Los Angeles/Long Beach and San Francisco exhibit no statistically significant relationship between rental costs and the adoption of their PRI program. San Jose and Sacramento city both have statistically significant relationships, although estimated effects have different signs. However, the magnitudes of these marginal impacts are small compared to the average rent increases over time. Inclusion of our PQI variable does not impact the results.

There are too many potential sources of bias and weak statistical power to make strong causal claims from these models. However, these findings may support statements from interviewees that market forces, and not PRI, cause the vast majority of changes in rents.

ADDITIONAL IMPACTS TO TENANTS - QUALITATIVE FINDINGS

In this section we describe some of the findings from our interviews related to potentially unintended consequences of PRI programs. Specifically, we discuss tenant displacement, illegal/uninhabitable units, tenant violations, and landlord retaliation/undocumented residents. In addition to the

quantitative research performed above, we believe that this qualitative understanding of the impact of PRI programs is necessary. This qualitative analysis provides context for our quantitative results while providing information on impacts that are not represented within our data.

Displacements

A potential impact of PRI programs is that they will result in the direct displacement of tenants. There are several possible mechanisms for displacement including the loss of rental units due to: illegal units, uninhabitable units, and tenant violations creating uninhabitable living conditions. Displacement can also be caused through increased landlord harassment in retaliation for tenants working with code enforcers or if undocumented residents are reported to immigration authorities. AHS data unfortunately does not provide any insight into these issues.

Illegal/Uninhabitable Units

Code enforcers occasionally protect the health and safety of tenants by enforcing minimum habitability levels and condemning buildings that do not meet them. City administrators can minimize this possibility by directing code enforcers to only condemn buildings in the presence of the most serious health or safety concerns. This discretion allows code enforcers to require that landlords fix serious but not immediately life threatening violations within a short time frame. Similarly, incorrectly permitted construction or violation of zoning regulations can be either ignored or enforced by code officials.

More problematic properties will require that code enforcers shut down units until landlords address violations. Relocation assistance clauses require that landlords pay tenants if they are required to move due to code violations. This ensures that tenants do not suffer any financial harm caused by landlord negligence. When units are permanently shut down, tenants receive a few months of rent from the landlord but then must begin paying market-rate rent on their own. This represents a policy trade-off between forcing low-income tenants to pay more in rent or allowing them to live in potentially dangerous conditions.

Tenant Violations

In some instances, there may be tenants whose behavior creates serious habitability concerns. In cases of hoarding or disability-related violations, there is no easy answer. In some cases, code officials can call mental health professionals to help. In other cases, landlords may be able to evict tenants because of damage to the unit. However, tenants with disabilities are protected under the fair housing act and should have access to extra allowances. The extent to which these protections are enforced is unclear.

Tenants can also be cited for overcrowding. Many municipal codes have substantial leeway in the interpretation of overcrowding. Additionally, program administrators can instruct code enforcers to only address overcrowding when egress requirements are compromised.

Landlord Retaliation/Undocumented Residents

Code officials in all jurisdictions report that they inform tenants of their purpose to inspect habitability issues and that they never ask tenants about their citizenships status. Landlord retaliation will always be an issue, but proactive targeting of properties means that landlords should know that tenants did not call for enforcement. Whether landlords are able to evict tenants or pass on rehabilitation costs depends on capital improvement pass-through and just cause rent control regulations.

CONCLUSION

While our quantitative findings may suffer from a lack of power, we fail to identify an association between PRI programs and habitability issues or changes in rent. However, our qualitative findings suggest that PRI programs reduce serious habitability issues when fully staffed and when both the interior and exterior of units are inspected. It is also essential that PRI programs be complemented with strong tenant relocation protections to give code enforcers more leverage to force landlords to improve units rather than take them off the market. Additionally, tenant relocation protections ensure that in cases where units must be condemned, tenants do not suffer due to landlord negligence.

While our quantitative analysis proved inconclusive, our qualitative findings have led us to believe that adopting PRI programs can be beneficial for some cities. However, any jurisdiction contemplating a PRI program should attempt to better understand a few areas:

- What is the best use of penalty monies? They can conceivably be used to remediate blight, provide low cost loans to well-meaning but poorly capitalized landlords, or provide added assistance to displaced tenants.

- Who are the landlords that this ordinance will target? Understanding their business structure ('mom and pop' or real estate corporation?) and capitalization will help model potential responses to better understand how many units may be taken off the market.

- How many illegal units are there? If there are a very large number of illegal units this could cause additional problems for tenants and code inspectors.

Ethan Guy is a second-year Master of Public Policy candidate at the Goldman School of Public Policy. His work focuses on economic and neighborhood development through pragmatic housing and land use policies.

Alex Marqusee is a second-year Master of Public Policy candidate at the Goldman School of Public Policy. His research centers on understanding the impact of local policies on affordable housing production, land use, and financial inclusion.

ENDNOTES

[1] Ruben Vives, Adolfo Flores and Kate Mather, "Fire in Converted South L.A. Garage Kills Mother, Son," The Los Angeles Times, March 5, 2014, http://www.latimes.com/local/la-me-fire-deaths-20140306-story.html.

[2] Steve King, Steve Spiker, John Garvey, Nic Aulston, "Building an Indicator Base for Healthy Housing Issues in Oakland," Urban Strategies Council, prepared for the Alameda County Health Homes Alliance (2013), http://www.infoalamedacounty.org/images/stories/Reports/USC_HealthyHousingReport.pdf.

[3] Ibid.

[4] More resources on Healthy Housing issues in California can be found at: http://www.cahealthyhousing.org/resources

[5] Amy Ackerman, Linda Galbreth, Anne Pearson, "A Guide to Proactive Rental Inspection Programs," ChangeLab Solutions (2014), http://changelabsolutions.org/sites/default/files/Proactive-Rental-Inspection-Programs_Guide_FINAL_20140204.pdf.

[6] Los Angeles' PRI program was implemented in 1999. Because of the potential conflict in determining when the PRI program was implemented during this year, the observations from this year were removed from our analysis.

[7] Frederick J. Eggers and Fouad Moumen, "American Housing Survey: A Measure of (Poor) Housing Quality," Econometrica, Inc., prepared for U.S HUD- Office of Policy Development and Research (2013) http://www.huduser.org/portal//publications/pdf/AHS_hsg.pdf.

[8] This is when the program was implemented following a 1997 blue ribbon commission. However, there were some serious program redesigns that happened that expanded the coverage following a 2001 audit. We feel it is more reasonable to use the 2003 sample as the first year when we can say that the PRI program was in effect.

[9] Author calculations from the 2012 American Community Survey five-year sample.

[10] G. Ahluwalia et al, "Study of Life Expectancy of Home Components," Economic Group of NAHB, National Association of Home Builders/ Bank of America Home Equity (2007). https://www.nahb.org/fileUpload_details.aspx?contentID=99359.

[11] "Rental Housing Inspection Ordinance- City of Sacramento," Rental Housing Association of Sacramento Valley, accessed November 20, 2014, http://www.rha.org/?213.

[12] John Quigley and Steven Raphael, "Regulation and the High Cost of Housing in California," (2005) https://gspp.berkeley.edu/assets/uploads/research/pdf/QR_RegAER0406.pdf.

[13] Oakland and San Francisco are reported as part of the same MSA. National average is 8.3; "Quarterly Vacancy and Homeownership Rates by State and MSA," United States Census Bureau, (2014). http://www.census.gov/housing/hvs/data/rates.html.

[14] Zillow Market Overviews, Zillow Real Estate Research, accessed March, 2014, http://www.zillow.com/research/local-market-reports/.

[15] American Community Survey data, accessed from http://www.ipsr.ku.edu/ksdata/ksah/housing/4house10.pdf.

[16] PQI has a mean of 3.05 with a standard deviation of 5.88 while our dependent variable for rent has a mean of 928 and a standard deviation of 450.

Attachment D

An Analysis of Proactive Rental Inspection Policies in California

July 2, 2014

Prepared By:
Ethan Guy, guyethan@berkeley.edu
Alex Marqusee, Alex.Marqusee@berkeley.edu
Masters of Public Policy Candidates at the Goldman School of Public Policy- The University of California, Berkeley

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Executive Summary

This report investigates effectiveness and impacts on tenants of Proactive Rental Inspection (PRI) programs in California over the past 15 years. The report frames the suitability of a PRI program for Oakland by analyzing in depth the PRI programs of four similar cities in California:

- San Francisco's Healthy Housing and Vector Control Program
- San Jose's Multiple Inspection Program
- Sacramento's Residential Housing Inspection Program (RHIP)
- Los Angeles' Systematic Code Enforcement Program (SCEP)

The investigation of these programs details each program's design including staffing, implementation, costs and fee and penalty schedules. A summary chart of these programs can be found in Appendix E. Our investigation of impacts on housing quality and tenants used interviews with key informants and a statistical study using the American Housing Survey (AHS). First, the investigation analyzed the impact of PRI programs on serious habitability issues in rental units. Then similar methods outline the impact of each program on rents, total housing costs, the conversion of rental units to condominiums, and the displacement of tenants due to each program.

Our findings suggest the following:

1. PRI programs reduce serious habitability issues of rental units when they are fully implemented and staffed and focus on both the interior and exterior of units.
2. No evidence suggests that PRI programs increase housing costs for tenants beyond normal market forces.
3. PRI programs are associated with higher likelihoods of landlords converting rental units to condominiums, but qualitative evidence suggests the dominant force is overall housing market forces.
4. Additional tenant displacement may occur due to PRI programs without relocation provisions, capital pass through limits, and other rent control protections.

Oakland's housing stock closely mirrors that of Los Angeles city's in terms of tenant demographics and housing stock characteristics. Los Angeles' similarities and success at addressing serious habitability issues without negative tenant impacts indicates that a similar PRI program can reduce serious habitability problems in Oakland rental housing without harming tenants. Three important caveats include:

- Oakland's housing stock is slightly older and contains a higher percentage of single family homes. Oakland's PRI program should consider covering single family home which may have more serious habitability issues.
- Oakland lacks many of the rent control ordinances that played a part in protecting tenants in Los Angeles. A strong mandatory relocation assistance provision in a PRI ordinance in Oakland is essential to protecting tenants and incentivizing landlords to comply with the PRI program.

- This report did not investigate the capacity of landlords in any city to comply with PRI program enforcement. Oakland landlords' financial ability to make improvements, especially 'mom and pop' landlords of older single family homes, is a critical area of further research.

Introduction

This report investigates several Proactive Rental Inspection (PRI) programs throughout California to better understand whether they work to improve the rental housing quality and how they impact tenants. The programs analyzed were:

- The City of San Francisco- Healthy Housing and Vector Control Program
- The City of San Jose- Multiple Inspection Program
- The City of Sacramento- Residential Housing Inspection Program (RHIP)
- The City of Los Angeles- Systematic Code Enforcement Program (SCEP)

First, the report evaluates whether the PRI programs improved the quality of rental housing stock. A data sources and methodology section outlines how we evaluated evidence of changes in housing quality. Next, we detail each program and analyze available evidence of the program's impact on housing quality. Appendix E includes a chart summarizing the specifics of each program. Appendix C includes an expanded discussion of our data sources and methodology.

Second, the report analyzes the potential impacts of PRI programs on tenants in the four cities of interest. This analysis relies on similar methodology and data sources as Section 2. The section begins with an overview of the methodology and data, and details the differences from the earlier investigation into rental unit quality. Next, we analyze whether PRI programs are associated with higher rents, increased condominium conversions, or increased tenant displacement.

Finally, this report summarizes earlier conclusions on how PRI program design impacts habitability and impacts tenants. We conclude with a recommendation for applying PRI program components to Oakland by comparing Oakland's housing stock to the four cities of interest and using the earlier findings to frame important policy choices.

Section 1: PRI Programs and Rental Unit Quality

This section answers the questions:

- What types of PRI programs have Los Angeles, Sacramento, San Francisco, and San Jose implemented?
- Have these programs improved the quality of rental housing?

Each section includes relevant details about the program's design and implementation including information on what the programs aims to cover, it's staffing and financing, and how the program interacts with landlords and tenants. These sections draw heavily on published materials about the programs as well as discussions with the administrators of each program. Then statistical and qualitative evidence is presented to evaluate the program's impact on the quality of rental housing. The next section gives an overview of the methods used to estimate each program's impact on the quality of rental housing.

Data Sources and Methodology:

Our investigation into PRI program impacts on rental housing quality relied on three methods:

1. **Interviews with key informants.** We spoke with code enforcement officials, tenants' rights advocates, and public interest lawyers to gather qualitative evidence on changing housing quality over time. These interviews were also essential in identifying how PRI programs affect unit quality, and how program design and other ordinances can protect or endanger tenant stability. We spoke with a head code enforcement official in each of the four cities, tenant advocates in L.A. and San Jose, and a number of knowledgeable healthy homes advocates that work on California housing policy. Most interviewees asked not to be attributed in the report and so will remain anonymous.
2. **Descriptive statistics**. Next, we assembled descriptive statistics from the American Housing Survey (AHS) to see what trends exist over time for rental units covered by PRI programs and rental units not covered by PRI programs. The AHS is administered by the Census for the Department of Housing and Urban Development (HUD). They periodically complete a national survey and oversample larger cities to create metropolitan level estimates. The cities of interest were all sampled two or three times between 1995 and 2011. The survey is longitudinal which allows us to compare mostly the same units at different points in time. The survey asks a large number of questions related to unit quality including about crack or holes in the foundation, broken windows, leaks, rodents, and heating equipment among others. HUD developed an index of over 20 of these indicators to measure serious housing problems. We use this Poor Quality Index (PQI) to measure serious problems with housing quality over time. Each graph compares the average unit's PQI across time, and shows different averages for single family homes (SFH) and non-single family homes (NSFH). For the most part, PRI programs only cover NSFH which allows for a simple visual comparison of the change in average PQI over time. If a PRI program works, the graph should show a decrease in PQI in non-SFH over and above any change in SFH.
3. **Fixed-effects Regressions.** Finally, we employ a linear, fixed-effects OLS model to refine our analysis from the visual inspection of the data. These regressions are necessary to isolate how PRI programs are associated with changes in unit quality over time apart from a

number of confounding factors. These factors could include: all units changing over time due to economic booms or busts; professional management companies providing more upkeep in larger buildings than smaller landlords do in rented SFHs; or different trends in investment for more expensive rental units than less expensive units. A fixed effects regression allows us to isolate the change in unit quality that is associated with a unit's inclusion in the PRI program but is not related to any of confounding variables listed above. A more detailed explanation of the fixed effects models used in this report and the PQI index can be found in Appendix C.

The City of San Francisco Healthy Housing and Vector Control Program

Background

The San Francisco Healthy Housing and Vector Control program aims to inspect all hotel rooms and the exteriors and commonplaces of all multi-family housing units in the city limits. All Multi-Family housing units and hotels, including single room occupancy hotels, are scheduled to be inspected once every three years. An increasing vector (rats, cockroaches, bed bugs, etc.) problem prompted the adoption of this program and inspections target areas that maybe suitable environments for vectors. These environments include areas with garbage accumulation, neglected and overgrown vegetation, and standing water. This PRI program differs substantially from the typical PRI program that aims to improve overall housing quality due to the limited scope of inspections. San Francisco maintains a separate complaint-based system for all rental units, but there is little overlap between inspectors.

Program Administration

The Department of Building Inspection and the Department of Public Health, specifically the Environmental Health division, jointly administer the program. Inspectors receive specialized training on identifying signs of vectors and environments conducive to vector growth. Currently, there are 17 inspectors- this includes 2.5 FTE that are dedicated to hotel inspections only, inspecting 17,000 apartment buildings and 750 Hotels, 500 of which are Single Room Occupancy buildings.

The program charges an annual fee per building based upon the size of the building (fee schedule can be found in Appendix A). The fees for hotels range from $363 annually for buildings with less than 20 units, to $1,399 annually for buildings with more than 175 units. The fees for apartment buildings range from $67 annually for buildings with 3 units, to $528 annually for buildings with over 30 units. Additionally, if a re-inspection is required the program charges $191 per hour for an Environmental Health Inspector or $172 for an Environmental Health Technician.

Landlords are notified of an impending inspection at least 10 days before the scheduled inspection. However, because only the exteriors and common areas of multi-family buildings and hotel rooms are inspected, landlords are not required to notify tenants.

Code Enforcement and Tenants

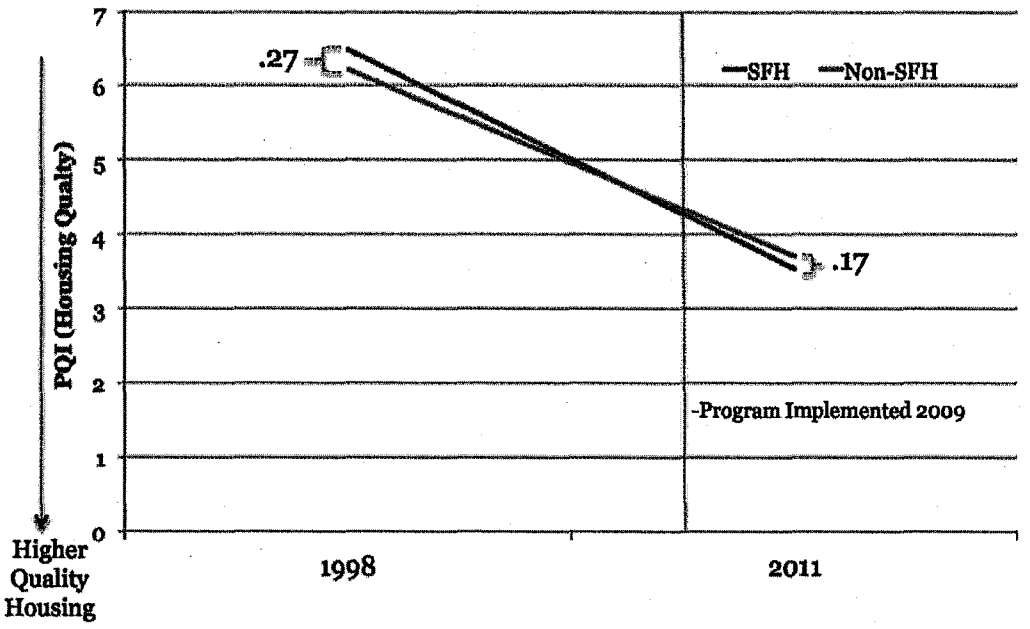
The San Francisco Department of Building Inspection solicits compliance through the City Attorney's authority to levy fines. Inspectors use fines as a threat to force compliance and often do not impose them in the end. If a violation is found, inspectors allow landlords up to 30 days to begin work on correcting the violation. Most violations take longer than this to correct since they are as a result of vector infestations which take longer to eradicate. During the 30 day window, landlords have to show reasonable effort towards correcting the violation including proof of contracting needed repairs or proof of treatments performed.

The City can begin an abatement conference if, after the allotted time period given by the inspector, there has been no action to resolve the violation. These conferences aim to bring parties together to inform all parties about potential problems and help parties communicate with each other. The conferences also begin the formal penalty process which then leads to a compliance hearing scheduled with 30 days' notice to the landlord. After this hearing, the inspectors can begin levying a $1,000 per day fine for non-compliance until the violation is resolved. If further action is necessary, cases are transferred to the City's Attorney's office for further legal actions.

Evidence of Improvement in Housing Quality

The graph below shows descriptive statistics of housing quality among rental units in San Francisco over time using the Poor Quality Index (PQI). There was no discernable difference in changes in housing quality between single family rental housing and multi-family rental housing between 1998 and 2011.[1] Both single family and multi-family rental units changed improved between the two years indicating a negligible effect from the San Francisco inspection program on overall housing quality.

Figure 1. City of San Francisco Housing Quality (1998 & 2011)



[1] There is no comparable data for San Francisco before 1998. Prior to 1998, San Francisco and Oakland were considered the same Standard Metropolitan Statistical Area and could not be easily differentiated using our data methods.

Regression Results

Our regression results confirm the descriptive data that there is no statistically significant difference between rental units who were covered by the program and units who were not. The table below shows the results of our three fixed-effects regression models. The first controls only for unobserved impacts of units over time that do not change (e.g. the unit's location among others) and trends over time. The second and third models also control for differences between single family homes and non-single family homes as well as levels of rent.

San Francisco Rental Units Analysis – Fixed Effects Regressions			
Parameter	Model 1	Model 2	Model3
Constant	4.67***	6.99***	6.68***
$ß_1$ PRI	2.81*** (.609)	-.780 (1.26)	-.747 (1.26)
$ß_2$ Single Family Home	-	-1.32 (1.03)	-1.35 (1.03)
$ß_3$ Rent	-	-	.0003 (.0002)
*** is 99% significant, ** is 95% significant, * is 90% significant			

Findings:

1. There is no statistically significant difference in housing quality between units that are in San Francisco's inspection program and units that are not included. Overall, all units housing quality improved and we detect no additional improvement among units in San Francisco's PRI programs.

AHS data allows for a further investigation into evidence of vectors in homes. The following chart highlights the change in reporting vector issues for rental units in the entire San Francisco Standard Statistical Metropolitan Area. Unfortunately, this area also includes San Mateo County and Redwood City but for the most part samples San Francisco City.

Table 1. Presence of Vectors in San Francisco SMSA (1998 & 2011)

Indicator	1998	2011	Percent Change
Signs of Mice	8.5% (28,800 units)	5.3% (20,200 units)	-37.6%
Signs of Rodents	11.6% (39,000 units)	6.7% (25,200 units)	-100%
Signs of Cockroaches	No Data	8.3% (31,300 units)	N/A
All indicators reflect the percent of all rental units who responded yes to the condition. The 1998 survey asked respondents if they had seen vectors in the past three months. The 2011 survey asked respondents if they had seen vectors in the past 12 months.			

Table 1 suggests that there are fewer issues with vectors in San Francisco currently then there were before the implementation of the program. The inspection program does appear to work as designed to decrease the prevalence of vectors.

Qualitative Evidence:

Interviews with officials at the Healthy Housing and Vector Control Program suggest that the program has been effective at addressing infestations throughout the city. Part of this success can be attributed to widespread education efforts by the Department of Public Health. One example of these efforts has been public health educators accompanying building inspectors on some of their inspections. The educators are then able to educate tenants on vector control and healthy housing issues.

Conclusion

The San Francisco Healthy Housing and Vector Control Program has succeeded in reducing vectors in rental housing but has made little impact in reducing other serious housing code violations. It is unclear whether improvements in vector control occurred due to the DBI's inspection program or the accompanied education campaign by the Department of Public Health.

The City of Sacramento Residential Housing Inspection Program (RHIP)

Background

The Sacramento Residential Housing Inspection Program aims to inspect all rental units within the city limits built more than five years ago. While the City of Sacramento program started in 2008, the County of Sacramento has had a far less aggressive program in place since 1993. When the City of Sacramento's program was first enacted, all units were scheduled to receive an initial inspection within the first five years of the program. However, it actually took the program seven years to inspect all of the units. Newly registered units are required to receive an initial inspection at the time of registration. Inspectors examine both the interior and exterior of all buildings and units. A full inspection checklist can be found in Appendix D.

All units that pass the initial inspection enter a self-certification program. The self-certification program allows landlords to perform their own inspections annually for tenants renewing their lease. They also inspect their own units at change of tenancy and in both cases city building inspectors don't perform the inspection. To ensure that landlords don't cheat on inspections, the city annually inspects a randomly selected ten percent of self-certified units. If a unit fails this inspection, the unit is removed from self-certification program and is inspected the subsequent year. Units re-enter the Self-Certification program if the unit passes this required inspection. During the first cycle, a large number of self-certified units failed the random audit. Program administrators attribute this to landlords not understanding that self-certification inspections must be completed annually. A public information campaign conducted with local renters associations has improved compliance.

Program Administration

During the initial stages, the program required significant administrative resources from the city. To inspect all the units, the program employed a supervising building inspector, eight building inspectors, a code enforcement officer as well as an unspecified amount of administrative staff. The inclusion of the self-certification program significantly reduced the burden on inspectors by limiting the number of units included in the multi-year inspection cycle. Currently, the program functions with only five building inspectors and administrative support staff.

Program fees are based upon a five-year fee schedule. Initially, the program fees were $26 per unit annually regardless of if the unit was selected for random inspection. Due to the reduced staffing need from the introduction of self-certification, the city lowered annual program fees to $16 per unit. The program also charges a fee of $127 per unit for the initial inspection of all newly registered units. Additionally, each re-inspection also incurs a $127 per unit fee.

The program also requires a "local contact representative." This individual must live within 35 miles of the Sacramento area, be available for inspections, and respond to notices on the owner's behalf. The program also requires a tenant's rights form to be provided to the tenants prior to occupancy. Please see Appendix D for the checklist.

Code Enforcement and Tenants

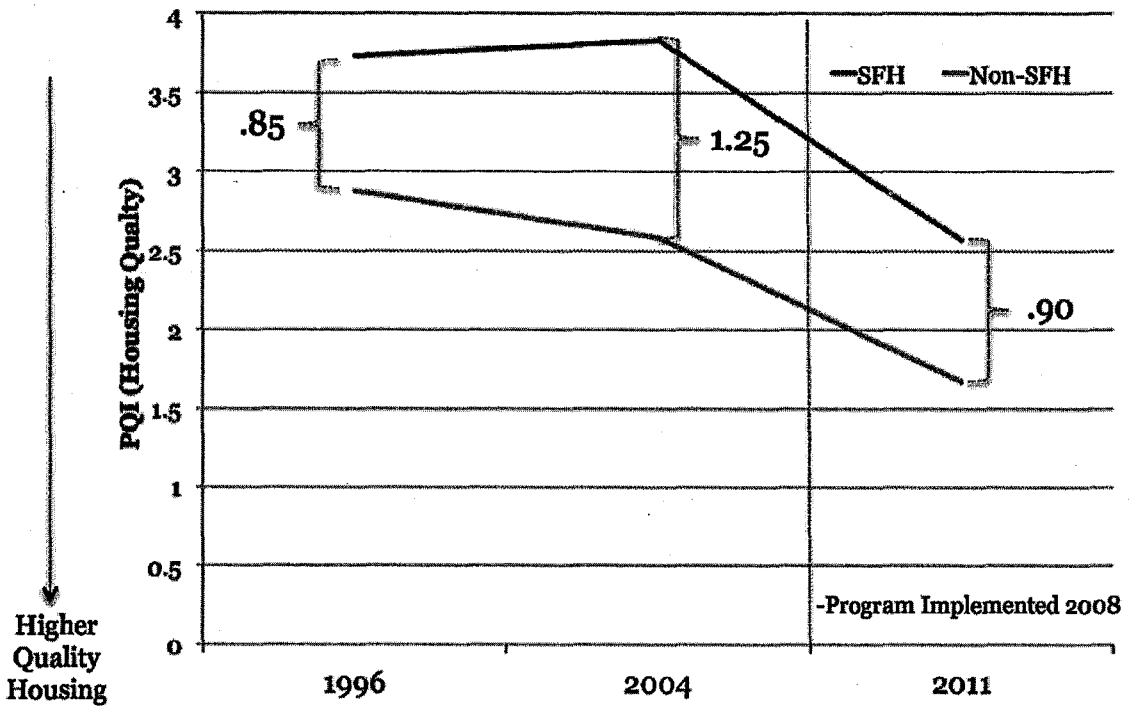
During the initial stages of this program, officials with the City of Sacramento hand-selected building inspectors that they felt would provide excellent customer service and use discretion in only reporting significant violations. Inspectors with RHIP have been trained to only look for violations that are included within the specific scope of the inspection; this includes fire hazards and other unsafe conditions.

The City of Sacramento enforces penalties and fines for unresolved violations. The large majority of landlords who receive a violation promptly fix the issue cited. However, the City of Sacramento threatens to place a lien on properties in the rare occasion that a citation is not fixed. Officials with RHIP have said that this has been successful in motivating the landlord to correct the violation. In instances requiring tenant relocation, landlords are required to provide housing for the tenant either in the building or at a hotel or motel. Code enforcement officials verify that this assistance has taken place and will escalate the issue if the situation requires.

Evidence of Improvement in Housing Quality

The graph below shows descriptive statistics of housing quality among rental units in the City and County of Sacramento over time using the PQI index. From 1996 to 2011, there is only a .05 PQI increase in the difference between single family rental homes and multi-family households. In other cities where single family households are not included in their PRI program (San Jose and Los Angeles), the units covered by the PRI improved at a quicker rate than units that were not covered. This suggests that the PRI programs in the City and the County of Sacramento together did not have any strong effect on reducing serious habitability issues.

Figure 2. City and County of Sacramento Housing Quality (1996, 2004 & 2011)



Regression Results

The regression results below confirm that there is no statistically significant difference in housing quality between rental units covered by a PRI program and all other rental units.

Sacramento Rental Units Analysis – Fixed Effects Regressions			
Parameter	Model 1	Model 2	Model3
Constant	2.45***	3.47***	3.32***
$ß_1$ PRI	-.413 (.416)	-.590 (.490)	-.586 (.490)
$ß_2$ Single Family Home	-	.095 (.570)	.100 (.571)
$ß_3$ Rent	-	-	.0003 (.0004)
*** is 99% significant, ** is 95% significant, * is 90% significant			

Findings:

1. PRI programs in the Sacramento metropolitan area are not associated with an improvement in housing quality greater than units not covered by the program. However, the coefficient for PRI programs is negative as expected indicating that units covered by the PRI program are on average of higher quality than those not covered, but we can only be approximately 80% sure this is not due to random sampling error.

The following regression results differentiate the impacts of the PRI programs in Sacramento City and the surrounding county. These models test whether the city and county programs have had

different results over the years. The County's program covers fewer types of units than the cities program and interviews suggest that the County program is more lenient. The data is for both owned and rented units in the Sacramento SMSA, as opposed to just rented units as for the other city regressions. This expansion of data is necessary to increase our sample size and detect results. The rental dummy variable controls for the differences between rented and owned units.

Sacramento City vs. County Rental Units Analysis – Fixed Effects Regressions			
Parameter	Model 1	Model 2	Model3
Constant	2.30***	2.56***	
β_{1a} PRI_Sac City	-.797* (.310)	-1.05*** (.369)	-.611 (.477)
β_{1b} PRI_Sac County	.491 (379)	.501 (.452)	.529 (1.18)
β_2 Rental	.325 (.258)	.364 (.311)	.463 (863)
β_3 Single Family Home	-	-.015 (.432)	-.083 (.532)
β_4 Rent	-	-	.0002 (.0003)
*** is 99% significant, ** is 95% significant, * is 90% significant			

Findings:

1. The City of Sacramento PRI program is associated with a statistically significant improvement in housing quality for units it covers. The positive coefficient on rentals shows that on average rental units have more housing problems than owned units. This adds greater strength to our finding that Sacramento City's PRI program improved rental housing quality since rental units were on average worse than owned units but PRI covered rental units improved more than either.
2. There were no significant findings of any impact of housing quality as a result of the County of Sacramento's PRI program. This could be because the county's program achieved all the improvement it could before our first data point, or because it is a less effective program

Qualitative Evidence:

Individuals involved with the RHIP program have said the biggest lesson learned from this program is the importance of training and education. They found that without properly training landlords on the program and self-certification requirements, the effectiveness of the program was severely impacted. To resolve this issue, officials at RHIP reached out to the tenant and landlord advocacy groups to educate those involved with the program on their roles and responsibilities. For tenants, this involved the development of a "Roles and Responsibilities" form that was to be signed by both the tenant and the landlord at a change of tenancy. For landlords, this included developing programs that train owners on how to perform self-certification inspections and the requirements and frequency of these inspections.

Conclusion:

The City of Sacramento Residential housing Inspection program has succeeded in improving housing quality. The self-certification component required additional public outreach initially, but has allowed inspectors to focus on higher risk properties. Including single family homes has been an essential component as they comprise over 40% of the rental housing stock in the city.[2]

The City of San Jose Multiple Inspection Program

Background

The San Jose Multiple Inspection Program aims to inspect all rental properties with three or more units over a 6 year cycle. These inspections overlap with a complaint driven inspection process completed by the same officials. Inspectors enforce a minimum habitability standard through enforcing building and housing codes and can issue administrative citations for unsafe or unhealthy conditions. The city auditor completed an extensive audit of the program in November of 2013 which included additional, detailed information on suggested improvements program management.[3] The audit points to potential improvements in increased coordination among inspecting agencies, investment in a revamped IT system, and advocates for a risk based targeting system instead of the current randomized inspections.

Currently, San Jose officials, the city council, and local stakeholders are working to change the proactive targeting scheme to allow for the self-certification of low risk buildings so that inspections focus on more problematic properties.

Program Administration

The San Jose PRI program focuses on addressing properties with serious health and safety concerns for tenants. The program's administration as well as individual inspectors have a great deal of flexibility and discretion in their approach to problematic properties. Training, experience, and strong management play a large part in determining the types of violations that investigators focus on. Training occurs during an academy training program that focuses junior inspectors on the most dangerous violations such as blocked egresses. More experienced inspectors are able to determine structural issues.

The program seeks to partner with landlords to bring properties up to code and seeks to avoid strong citations or legal proceedings. Program management reports that less than 1% of properties end up in court for failure to address their code violations. In addition, inspectors frequently do not charge owners the mandatory re-inspection fee.[4] Finally, inspectors repeatedly stress to landlords that consistent maintenance is in their own financial best interest as capital improvements required after deferred maintenance are far more costly.

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[2] "2008-2012 American Community Survey 5- Year Estimates, City of Sacramento" United States Census Bureau. Accessed April 2012.

[3] "Code Enforcement: Improvements Are Possible, But Resources Are Significant Constrained." Report to the City Council of San Jose. Office of the City Auditor. Report 13-11. November 2013. <http://www.sanjoseca.gov/DocumentCenter/View/23918 >

[4] "Code Enforcement: Improvements Are Possible, But Resources Are Significant Constrained," page 45

Notice is given to property owners in advance of an inspection, and inspectors forward a preparation checklist. City officials do not give notice to tenants in advance of an inspection, and the 2013 audit recommended informing tenants after the inspection of any recorded violations. Currently, property owners are required, at minimum, to notify tenants of scheduled inspections but there are no enforcement mechanisms

Code Enforcement and Tenants

Code inspectors can exercise discretion in enforcing codes and this enables them to apply their mandate towards the protection of tenants. The Municipal code allows a great deal of latitude in terms of the definition of overcrowding and so inspectors only cite units as overcrowded if there is a serious threat to safety. Similarly, code officials often will permit units with serious violations to remain open for a very short amount of time to allow the landlord to make repairs without displacing tenants. In serious cases, code officials and tenant advocates report that working across government agencies and tenant advocacy organizations ensures that displaced or vulnerable tenants receive enough supportive services such as access to a homeless coordinator, a housing rights lawyer, mental health services, and transitional housing when available. Finally, code officials announce their intent at the beginning of an inspection and do not inquire into immigration issues so as to avoid making resident immigrants fearful of the intrusion.

Most importantly, the San Jose PRI ordinance includes a relocation payment provision for tenants that services to protect tenants and incentivize landlords to prioritize fixing code violations when possible. When tenants are displaced for code violations, landlords are responsible for relocation assistance. For temporary relocation (less than 60 days), owner is responsible for providing similar housing at no additional cost to tenants. In the case of long term (greater than 60 days) or permanent relocation, the owner is responsible for the greater of three months of fair market rent or the rent of the closed unit. The landlord is also responsible for transportation expenses, employment costs, and the safety of the tenant's belongings. In these cases, tenants are offered some protection in the case of displacement. Landlords are also incentivized to repair code violations rather than shutting down the unit in cases where relocation assistance exceeds three months of fair market rent.[5]

Evidence of Improvement in Housing Quality

The graph below shows descriptive statistics of housing quality among rental units in San Jose over time using the PQI index. San Jose's multiple housing program includes buildings with three or more units but does not include rented single family homes or duplexes. The graph below includes duplexes into multi-family rental buildings for easier comparison with other cities, but the impact of this should be quite small as duplexes comprise only 4.3% of the rental market in San Jose.[6]

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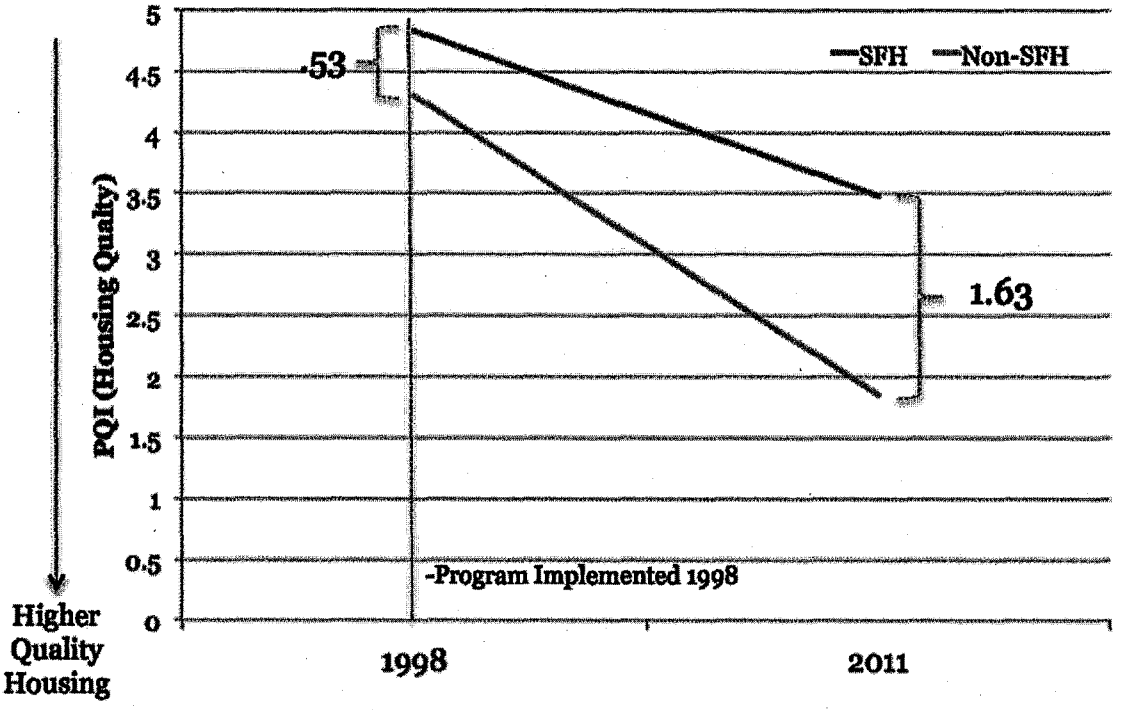
[5] Three months of fair market rent for a two bedroom unit is currently $4947, the minimum amount of relocation assistance in this case. "Schedule B: FY 2014 Final Fair Market Rents for Existing Housing." U.S. Department of Housing and Urban Development. Page 4.
<http://www.huduser.org/portal/datasets/fmr/fmr2014f/FY2014F_Schedule_B.pdf>

[6] "2008-2012 American Community Survey 5- Year Estimates, City of San Jose" United States Census Bureau. Accessed April 2012.

Figure 3.City of San Jose Housing Quality (1998 & 2011)



Rental units in larger buildings appear to have improved more than rented single family homes. Data available for 1998 shows the average housing quality before the implementation of the program, and 2011 shows post implementation quality. In 1998, there was an average .53 PQI difference between SFH's and multi-unit buildings. In the ensuing 13 years all housing units improved in quality but non-SFH improved 29% more.

Regression Results

The regressions below test whether the improvements seen in non-SFH rentals above are statistically significantly greater than the improvements for all other rental units. The table below shows the results of our three fixed-effects regression models. The first controls only for unobserved impacts of units over time that do not change (e.g. the unit's location among others) and trends over time. The second and third models also control for differences between single family homes and non-single family homes as well as levels of rent.

San Jose Rental Units Analysis – Fixed Effects Regressions			
Parameter	Model 1	Model 2	Model3
Constant	4.23***	4.41***	4.30***
$ß_1$ PRI	-.503 (.627)	-.994 (.680)	-.972 (.69)
$ß_2$ Single Family Home	-	.365 (.721)	.371 (.722)
$ß_3$ Rent	-	-	.00011* (.00045)

*** is 99% significant, ** is 95% significant, * is 90% significant. Standard errors in parentheses.

Findings:

1. The improvement in housing quality related to PRI is negative as hypothesized but only significant at about the 85% confidence level. This suggests that units covered by the PRI program are mostly likely associated with improving housing unit quality, but there is a 15% chance that this finding is just due to selecting this sample of houses.
2. The negative association between units covered by the PRI program and the PQI is separate from any trends in time, the fact that single family homes are not covered in the PRI program, and the levels of rent for different

Qualitative Evidence:

Interviews with code enforcement officials and the city auditor suggest that the program has been successful in encouraging landlords to fix code violations. Implementation of the program has been uneven over the years and the program has been understaffed for most of its time. Tenant advocates concur that they have seen far fewer complaints of uninhabitable units over the past decade. However, they also suggest that the great recession, ensuing budget cuts, and reduced code enforcement staff have limited the programs impact. This suggests that the San Jose PRI program's effect has been successful but muted due to insufficient staffing.

Conclusion

San Jose's Multiple Inspection program has succeeded in improving housing quality. Slow implementation early in the program and a lack of consistent staffing contributed to a muted impact on improving housing quality. Results might also be attenuated by fact that the program does not include single family homes meaning it has left out approximately a third of its rental housing stock.[7]

The City of Los Angeles Systematic Code Enforcement Program (SCEP)

Background

The Los Angeles Systematic Code Enforcement Program (SCEP) aims to inspect each unit in all multi-unit rental properties over a 4 year cycle. Buildings where the owner occupies one of the units are exempt from the program. Inspectors review the entirety of the building and all units in the building when inspecting a property. SCEP will be beginning their fourth cycle of inspections this July.

Program Administration

SCEP has an inspection force of 100 building inspectors. Inspectors are split into four regions (North Los Angeles, South Los Angeles, East Los Angeles, and West Los Angeles). Each region includes: one primary inspector, four senior inspectors (including one senior case management inspector), and twenty building inspectors (including one case management inspector).

[7] "2008-2012 American Community Survey 5- Year Estimates, City of San Jose" United States Census Bureau. Accessed April 2012.

Inspectors are assigned between 30 to 45 minutes per unit for an inspection. If a violation is found, the landlord is given up to 30 days to remediate the problem. After 30 days, inspectors return to the units to ensure the violation has been fixed. If the violation is still present, inspectors can grant an additional 30-day extension if they feel there has been a good faith effort by the landlord to fix the issue. If the inspectors do not grant an extension, the landlords can petition to the senior inspector and request a hearing with the compliance department. Program fees cover the initial inspection and the first reinspection when necessary. All subsequent inspections are paid by the landlord and cannot be passed through to the tenant.

Code Enforcement and Tenants

The extent to which building code is enforced is often dependent upon the preferences of the primary SCEP inspector of that region. For the most part, SCEP inspectors selectively enforce the building code looking specifically for potential fire hazards as well as the presence of mold and vectors. SCEP inspectors are also responsible for assessing the presence and potential code violations of illegally subdivided units as well as unregistered accessory dwelling units. Officials at SCEP stress the importance of customer service from SCEP inspectors to maintain trust with tenants and landlords. This effort is supported by assistance from tenant advocacy groups within the region.

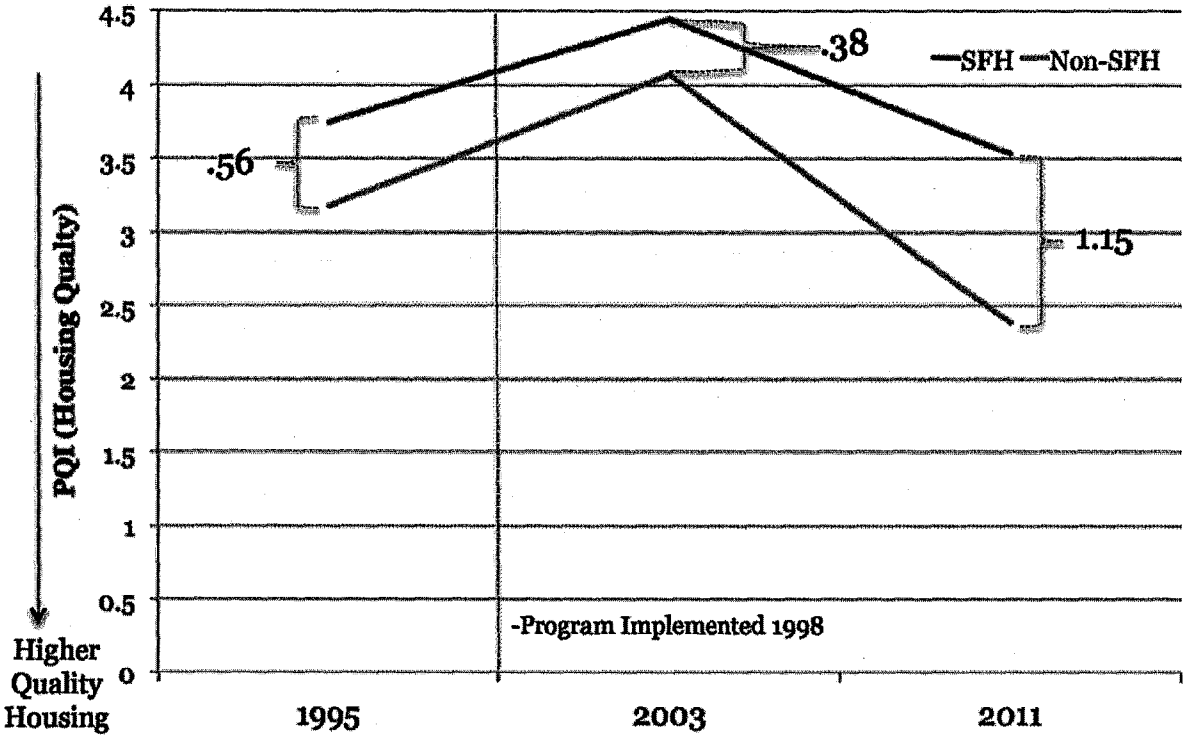
Another major component of the SCEP program is relocation assistance provided to tenants who may be displaced as a result of substandard housing units. If a tenant is forced to relocate, landlords are required to provide financial assistance to the tenant based upon a calculation determined by SCEP. This amount can range from approximate $8,000 for a couple to nearly $20,000 for a family of four.

Additionally, SCEP has been successful at detailed records of inspection results. These records allow city officials and housing advocates to identify problematic landlords. Identifying these landlords has helped make enforcement more efficient as well as targeting education and outreach efforts.

Evidence of Improvement in Housing Quality:

The graph below shows descriptive statistics of housing quality among rental units in Los Angeles and Long Beach over time using the PQI index. Unfortunately, the data does not allow Long Beach to be separated from the City of Los Angeles. Fortunately, both programs implemented fairly similar PRI programs in 1998 and data points are predominantly from Los Angeles (approximately 80-90% of sampled units). Both programs include all multi-unit rental properties in their programs, and the below graph compares units in the PRI program (non-SFH after 1998) with units not in the PRI program (SFH, and non-SFH before 1998).

Figure 4.City of Los Angeles Housing Quality (1995, 2003 & 2011)



There is some evidence from these descriptive statistics that units in the PRI program improved at a better rate than non-PRI programs after 2003. Non-SFH improved by 20% more than non-SFH from 2003 to 2011. This could be from the increased rigor and funding with which the program was implemented in Los Angeles beginning in the early 2000s.

Regression Results

The regressions below test whether differences in improvements in housing quality between PRI and non-PRI programs are statistically significant. The table below shows the results of our three fixed-effects regression models as introduced earlier.

Los Angeles/Long Beach Rental Units Analysis – Fixed Effects Regressions			
Parameter	Model 1	Model 2	Model3
Constant	3.05***	3.77***	3.53***
β_1 PRI	.731** (.305)	.197 (.342)	-.072 (.452)
β_2 Single Family Home	-	-.587 (.429)	-.890 (.590)
β_3 Rent	-	-	.0007* (.0004)
*** is 99% significant, ** is 95% significant, * is 90% significant			

Findings:

1. No statistically significant impact is seen from the introduction of PRI programs. Controlling for trends in how SFH homes have changed absorbs the majority of the variation seen in the first model that showed a significant relationship between PRI and PQI. This may be due real differences between the Los Angeles and Long Beach programs that we are unable to differentiate in the data.

Qualitative Evidence:

SCEP officials and tenant advocates have stressed the importance of collaborative outreach to both tenants and landlords. By developing a relationship with all interested parties they were able to build trust which allowed or more effective inspections. Advocates report that prior to the SCEP program there were numerous reports of serious code violations including serious leaks each winter and sagging roofs. SCEP officials have also reported that the severity of code violations has decreased since the implementation of the program.

Conclusion

The statistics are unable to confirm qualitative evidence that the SCEP program has been successful in improving housing quality. However, the strong indications from all interviews indicates that the program has strikingly reduced the number of complaints of very serious habitability issues. Strong rent control and mandatory relocation assistance ordinances also played a key role in ensuring the program's success.

Section 2 Evidence of Negative Impacts On Tenants:

There are many concerns that PRI programs will create additional burdens for renters. After introducing a summary of rent control in each of the cities of interest, this section investigates three major concerns of tenant advocates to PRI programs:

1. Landlords will raise rents due to a PRI program;
2. PRI programs will pressure landlords to remove rental units from the market and sell them as condominiums instead;
3. PRI programs will cause increased displacement

Rent Control

Los Angeles Rent Control:

Los Angeles' version of 'vacancy decontrol' rent control heavily restricts the ability of landlords to raise rents each year for units in buildings built before 1979. Landlords may increase rent by a percentage of rent which must be between eight and three percent of rent. Since 1994, the L.A Rent Adjustment Commission has maintained allowable increases at 3%. The SCEP program fees for 2014 are $43.32 per unit annually. Landlords have the right to pass on all fees incurred through the SCEP which translates to monthly surcharge of $3.61 which remains exclusive of the percentage increase allowed by the rent control ordinance. Finally, landlords must petition the Rent Adjustment Condition to pass on any costs related to capital improvements, abating code violations, or rehabilitation work after a natural disaster.[8]

Los Angeles also protects tenants through a just cause eviction ordinance that allows for tenant evictions only for a proscribed set of tenant infractions.[9]

San Francisco Rent Control:

San Francisco rent control covers buildings with 3 or more rental units that are built prior to 1979. Since 1996, rent control also covers rental buildings where the owner occupies at least of one of the units.

Landlords are allowed to increase rental prices annually based upon a set percentage determined by San Francisco, which is pegged to the CPI. For buildings with 5 or less units, San Francisco allows for a Capital Pass-through of 100% of the total cost of construction. For buildings with more than 6 units, landlords are only able to pass through 50% of total capital improvement costs. Based upon these costs, landlords may increase the rent annually by a maximum of 5% of total capital improvement costs. Additionally, tenants are allowed to determine what percentage of the total cost they are willing to pay in a rent increase.

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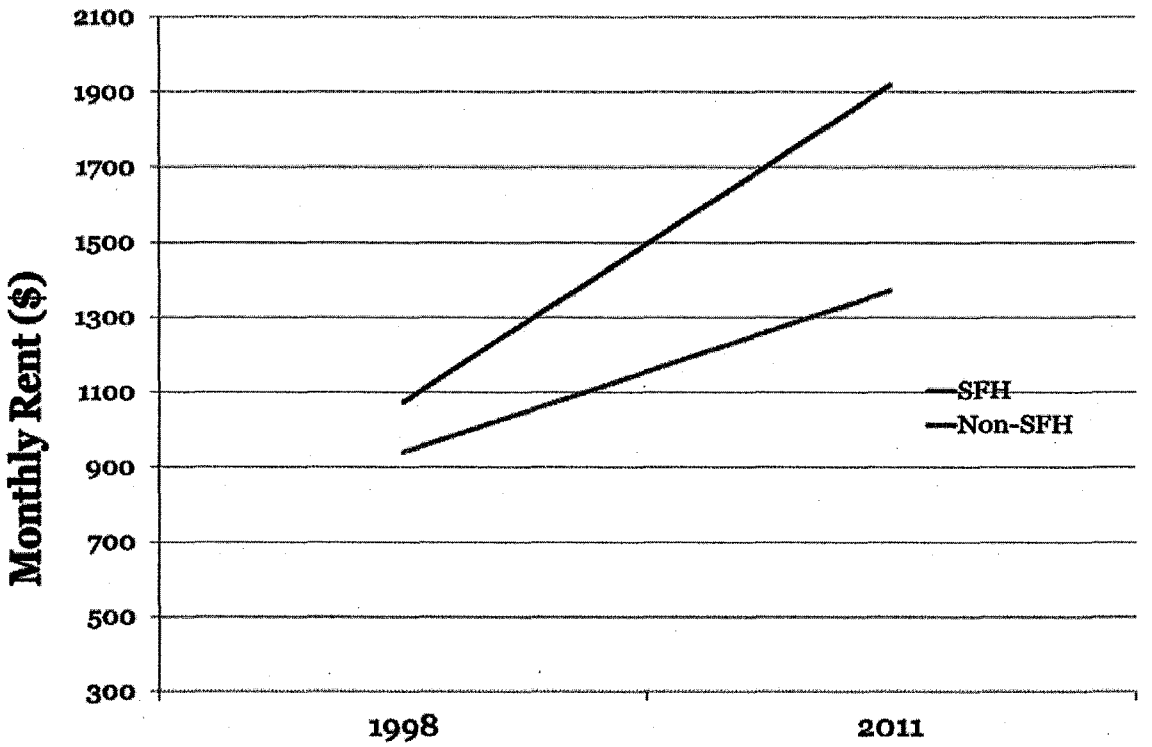
[8] "Allowable Rent Increases." Rent Stabilization Bulletin. Los Angeles Housing and Community Investment Department. Page 2. < http://lahd.lacity.org/lahdinternet/LinkClick.aspx?fileticket=RHSagu8gnT8=>

[9] "Landlord Tenant Handbook: Your Guide to the Rent Stabilization Ordinance." Los Angeles Housing Department. City of Los Angeles. Page 29. August 2012. <http://lahd.lacity.org/lahdinternet/LinkClick.aspx?fileticket=CohLSEKsZMk%3D&tabid=146&language=en-US>

1. These findings suggest that in most of our cities of interest (all except San Jose); there is no difference between the growth of rents for PRI and non-PRI programs.
2. San Jose shows a consistent and statistically significant difference where the monthly rent of PRI units have, on average, grown 150-200 dollars less than non-PRI units. The reason for this is unclear, but it may have to do with the extreme pressures on the San Jose rental market and the large number of single family homes for rent. The San Jose PRI program does not cover single family home rentals which comprise over 30% of the rental housing stock.[13] Strong rent increases for single family homes in just San Jose would not be fully accounted for in the California wide variation of the single family home control. The additional variation between single family homes and non-single family homes would then be accounted for in the PRI San Jose variable. The graph below illustrates the divergent paths of single family and non-single family homes in San Jose:

Figure 6.City of San Jose Rental Housing – Average Monthly Rent



Finally, we performed a similar set of regressions using total monthly housing costs as our dependent variable. This served both as a check of the above regressions as well as an investigation into the possibility that landlords are responding to the pressures of PRI programs by passing on more utility costs to tenants.

California Rental Dataset – Fixed Effects Regressions of Individual PRI Programs on Total Monthly

[13] 2012 ACS estimate, 33.9%

Sacramento Rent Control:

The City of Sacramento does not have a city specific rent control ordinance.

San Jose Rent Control:

San Jose rent control covers larger apartment buildings built before 1979, but allows for an annual 8% rent increase. Such a large allowable rent increase severely weakens the tenant protection aspect of rent control as market increases rarely approach 8%.[10] Also, there are no just cause eviction protections except for state wide notice requirements.

Costs

Economic theory suggests that increasing the enforcement of housing code will increase the quality of that housing thereby raising the market rent that a landlord could then charge. Additionally, fees and penalties from the program paid by the landlord could be passed down onto the tenants. Oakland's four peer cities are all desirable places to live, and this heightened demand means that landlords have the ability to charge increasingly high rents without fear of being able to replace a tenant. The following chart summarizes the current housing markets:

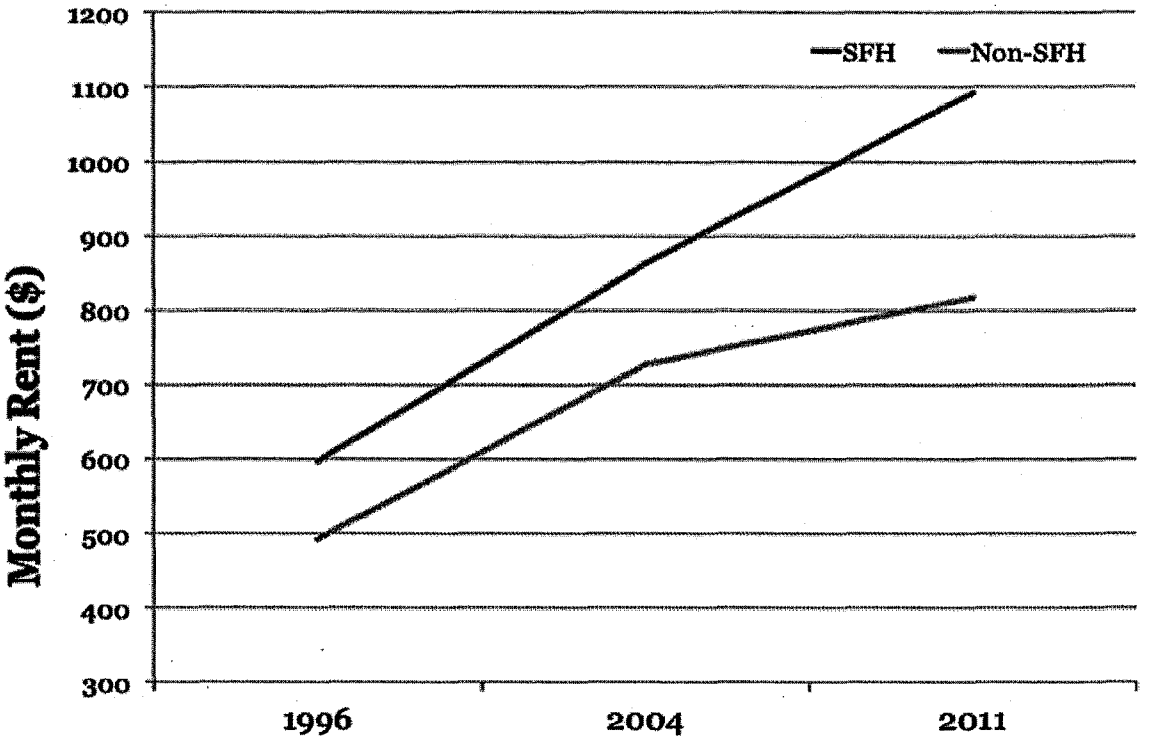
City	Oakland	San Francisco	Los Angeles	San Jose	Sacramento	California Average
Vacancy Rate[11]	4.5	4.5	6.0	2.4	5.8	5.2
Annual rent increase (March 2014)[12]	10.8%	4.4%	1.9%	5%	3.1%	3.7%
Median Rent (March 2014)	$1580	$3500	$2000	$2380	$1100	$2076
Median Rent per square foot (March 2014)	1.6	2.8	1.7	1.8	0.9	1.34

As seen in this chart, all of our cities of interest are either more expensive than the California average, or are growing more expensive faster than the California average. The following graph

[10] Bay Area Economics. "Economic Analysis of San Jose's Rent Control Program". Prepared for City of San Jose Housing Department. Page 17. December 2004.
<http://www3.sjhousing.org/Program/ACOR/SJ%20Rent%20Study%2004.pdf>
[11] Oakland and San Francisco are reported as part of the same MSA. National average is 8.3- "Quarterly Vacancy and Homeownership Rates by State and MSA." United States Census Bureau. May 2014.
<http://www.census.gov/housing/hvs/data/rates.html>
[12] Zillow Market Overviews. Zillow Real Estate Research. Accessed March 2014.
<http://www.zillow.com/research/local-market-reports/>

illustrates the change in monthly rents seen through the AHS dataset for single family homes and non-single family homes in the City of Sacramento. Analogously to our investigation of PQI, SFH and non-SFH for the most part stand in for changes in the rental stock of units covered by PRI programs (non-SFH) and units not covered by PRI programs (SFH).

Figure 5.City of Sacramento Rental Housing – Average Monthly Rent



As seen in the graph above, the price of rental housing has increased over the past fifteen years. However, the price of non-SFH have not increased at the same rate as SFH. This trend is seen nearly identically throughout all of the cities of interest [Please see Appendix B for the rest of the graphs].

Regression Results:

A fixed-effects regression model illustrates that rents have not increased over time more for PRI households than non-PRI units. The dependent variable for this regression is contract rent, the amount of money paid only for rent not including any in-kind payments or utility costs. We ran the fully specified model on a pooled data set that included observations from metropolitan areas across the state. The fixed effects model only evaluates units against each other and so controls for both any local market idiosyncrasies or unobserved characteristics of the unit that do not change over time. Trends over time are accounted for by a series of year dummy variables which in this case capture the general rise in rents over the years. Additional controls were included to check the strength of the PRI to rent relationship. These controls were whether or not the unit: is covered by rent control (Rent Control=1 if covered); is a single family home (SFH=1 if it yes), the number of units in a building; and is in the center city (Center City = 1 if in the center city).

California Rental Dataset – Fixed Effects Regressions of PRI on Monthly Rent				
Parameter	Model 1	Model 2	Model 3	Model 4
Constant	690***	692***	686***	673***
$ß_1$ PRI	-53** (22.4)	-28 (26)	-24 (27)	-30 (27)
$ß_2$ Rent Control	-	-54* (32)	-51 (32)	-75* (39)
$ß_3$ Single Family Homes	-	-	18 (13)	15 (14)
$ß_4$ Units in Building	-	-	-	-.056 (.123)
$ß_5$ Center City	-	-	-	50 (46)
*** is 99% significant, ** is 95% significant, * is 90% significant				

Findings:

1. PRI programs on average are associated with a smaller increase in rents over time than non-PRI units, however this relationship does not appear to be significantly different from zero.
2. The existence of rent control in the model overwhelms the differences between PRI and non-PRI programs. This suggests that rather than the PRI program keeping rents from growing with non-PRI units, the fact that most PRI units are also covered by rent control is the main determinant of more slowly growing rents.
3. Differences in the growth of monthly rents are not associated with differences in building size or location in city centers.

As a check of our above findings, we tested the same set of models against the PRI programs of our cities of interest.

California Rental Dataset – Fixed Effects Regressions of Individual PRI Programs on Monthly Rent				
Parameter	Model 1	Model 2	Model 3	Model 4
Constant	688***	691***	686***	681
$ß_{1a}$ PRI_San Francisco	-88 (57.3)	-55 (66)	-43 (67)	-34 (74)
$ß_{1b}$ PRI_San Jose	-206*** (67)	-178** (73)	-165** (74)	-158** (78)
$ß_{1a}$ PRI_Los Angeles/Long Beach	-31 (33)	-12 (38)	-9 (38)	-15 (48)
$ß_{1a}$ PRI_Sacramento	-13 (41)	-13 (41)	-12 (41)	-11 (41)
$ß_2$ Rent Control	-	-36 (37)	-37 (37)	-46 (50)
$ß_3$ Single Family Homes	-	-	14 (14)	13 (14)
$ß_4$ Units in Building	-	-	-	-.059 (123)
$ß_5$ Center City	-	-	-	16 (66)
*** is 99% significant, ** is 95% significant, * is 90% significant				

Housing Cost				
Parameter	Model 1	Model 2	Model 3	Model 4
Constant	736***	736***	726***	720***
$ß_{1a}$ PRI_San Francisco	-95* (53)	-96 (61)	-73 (62)	-58 (68)
$ß_{1b}$ PRI_San Jose	-235*** (62)	-236*** (68)	-212*** (69)	-201*** (73)
$ß_{1a}$ PRI_Los Angeles/Long Beach	-23 (30)	-24 (35)	-19 (35)	-29 (45)
$ß_{1a}$ PRI_Sacramento	34 (38)	34 (38)	35 (38)	37 (38)
$ß_2$ Rent Control	-	.387 (34)	-.687 (34)	-16 (47)
$ß_3$ Single Family Homes	-	-	27** (13)	24* (13)
$ß_4$ Units in Building	-	-	-	-.143 (.114)
$ß_5$ Center City	-	-	-	27 (61)
*** is 99% significant, ** is 95% significant, * is 90% significant				

Findings for Monthly Cost mirror findings for Monthly Rent:

1. In the same way as with monthly rent, these findings suggest that in most of our cities of interest (all except San Jose), there is no difference between the growth of total housing costs for PRI and non-PRI programs.
2. In the same way as with monthly rent, units covered by PRI programs in San Jose are associated with a smaller increase in monthly total housing costs.
3. Rent control is not strongly associated with changes in monthly housing costs. This stands to reason as non-rent housing costs are not covered by rent control.

Condo Conversions

A common fear among tenant advocates in hot housing markets is that landlords will decide to cash in on rising sale prices by converting their rental units to condominiums for sale. Real estate market analysts contend that common interest development (CID)[14] developers often initially rent units and wait to sell them when the for-sale market begins to peak.[15] Anecdotally, these conversions were rampant during the housing market pre-great recession in 2007 and are currently starting to return to

[14] Common interest developments include condominiums, cooperatives, and planned communities that are characterized by units for sale where owners own their own unit and jointly own common property (hallways, pools, parking lots, etc) that are governed by deed via conditions, covenants, and restrictions. For an overview of CID's in California, Please see: Roland, Helen E. "Residential Common Interest Developments: An Overview." California Research Bureau, California State University. March 1998. <http://www.library.ca.gov/crb/98/06/98006.pdf>

[15] Isaacs, Linsey. "Condo Conversion Market Starts Its Engines." Multifamily Executive. August 28, 2013. <http://www.multifamilyexecutive.com/condo-conversions/condo-conversion-market-starts-its-engines.aspx>

those levels.[16] The important question for this paper is to determine the marginal impact of PRI programs on CID rental to owned conversions outside of these theorized market trends through the AHS dataset.

Regression Results

The below fixed-effects regression results investigates the relationship between PRI programs and CID units. The dependent variable for this regression "condo" is a binary variable that is one if the unit is a CID and 0 if it is not. The coefficients on explanatory variables represent the percentage point change in the percentage of condominiums within that group. The PRI variables have been modified to include all units that are eligible for the program based on number of units in the building and the age the building was built but ignoring whether or not the unit is rented or not. In this way, we hope to capture whether the existence of a PRI program is associated with additional condo conversions over time. The AHS data set includes owned as well as rented properties. Similar controls are included from the earlier models.

California Rental Dataset – Fixed Effects Regressions of Individual PRI Programs on Probability of Unit Being a CID				
Parameter	Model 1	Model 2	Model 3	Model 4
Constant	.082***	.083***	.087***	.080***
$ß_{1a}$ PRI Eligible San Francisco	.068*** (.015)	.121*** (.017)	.076*** (.023)	.074*** (.023)
$ß_{1b}$ PRI Eligible San Jose	.091*** (.019)	.127*** (020)	.024 (.023)	.027 (.023)
$ß_{1a}$ PRI Eligible Los Angeles/Long Beach	.077*** (.010)	.114*** (.012)	.069*** (.012)	.056*** (.013)
$ß_{1a}$ PRI Eligible Sacramento	.012 (.010)	.012 (.010)	.022** (.010)	.020** (.010)
$ß_2$ Rental	-.028*** (.003)	-.026*** (.003)	-.028*** (.003)	-.028*** (.003)
$ß_3$ Rent Controlled	-	-.063*** (010)	.057*** (.010)	-.061*** (.011)
$ß_4$ Single Family Homes	-	-	-.0018 (.0043)	.0006 .0042
$ß_5$ Units in Building	-	-	-	.0002*** (.00004)
$ß_6$ Center City	-	-	-	.019* (.011)
*** is 99% significant, ** is 95% significant, * is 90% significant				

Findings:

1. Units eligible for PRI programs are associated with higher levels of CIDs. This finding remains significantly different from zero and at a similar level even after other potential explanations are introduced to the model (the facts that both PRI units and condominiums tend to locate in: larger buildings, center city areas, not in single family homes, and not in

[16] Ottens, Cale. "Condo Conversions inch up in L.A." Los Angeles Times. August 09, 2013. <http://articles.latimes.com/2013/aug/09/business/la-fi-condo-conversion-20130809>

rent controlled units which are more likely to have just cause evictions or relocation payments)

2. The effect appears to be between two to eight percentage points. This translates to units eligible for PRI programs being turned into condominiums in approximately ten to sixteen percent of the time, while all other units are on average turned into condominiums only eight percent of the time.

Displacements

A final potential impact of PRI programs concerns the possibility that PRI programs will result in the direct displacement of tenants. There are several possible mechanisms for displacement including the loss of rental units due to: illegal units, uninhabitable units, and tenant violations creating uninhabitable living conditions. Displacement can also be caused through increased landlord harassment in retaliation for tenants working with code enforcers or if undocumented residents are reported to immigration authorities. AHS data unfortunately does not provide any insight into these issues. However, interviews with code officials and tenant advocates from several cities with PRI programs offered the following insights:

Illegal/Uninhabitable Units:

Code enforcers occasionally protect the health and safety of tenants by enforcing minimum habitability levels and condemning buildings that don't meet them. City administrators have the ability to minimize this possibility by directing code enforcers to only condemn buildings when there is the most serious health or safety concerns. This discretion allows code enforcers to require that landlords fix serious but not immediately life threatening violations within a short time frame. Similarly, incorrectly permitted construction or violation of zoning regulations can be either ignored or enforced by code officials.

More problematic properties will require that units are shut down until violations are abated. Relocation assistance clauses require that landlords pay tenants if they are required to move due to code violations. This insures that tenants do not suffer any financial harm caused by landlord negligence. When units are permanently shut down, tenants receive a few months of rent from the landlord but then must begin paying market rate rent on their own. This represents a policy trade-off between forcing low income tenants to pay more in rent or allowing them to live in potential dangerous conditions.

Tenant Violations:

In some instances, there may be tenants whose behavior creates serious habitability concerns. In cases of hoarding or other disability related violations, there is no easy answer. In some cases, code officials can call mental health professionals to help. In other cases, landlords may be able to evict tenants because of damage to the unit. However, tenants with disabilities are protected under the fair housing act and should have access to extra allowances. The extent to which these protections are enforced is unclear.

Tenants can also be cited for overcrowding. Many municipal codes have substantial leeway in the interpretation of overcrowding. Additionally, program administrators can instruct code enforcers to only address overcrowding when egress requirements are compromised.

Landlord Retaliation/Undocumented Residents:

Code officials in all jurisdictions report that they inform tenants that they are there to inspect habitability issues and that tenants are never asked about their citizenships status. Landlord retaliation will always be an issue, but proactive targeting of properties means that landlords should know that tenants did not call for enforcement. Whether landlords are able to evict tenants or pass on rehabilitation costs depends on capital improvement pass-through and just cause rent control regulations.

Application to the City of Oakland

Of the programs that this report analyzed, Oakland's situation is most comparable to that of Los Angeles. The following table illustrates that Oakland's rental housing stock appears to be a smaller version of Los Angeles' with a few key differences:

Figure 7.Oakland and Los Angeles Rental Housing Stock

Indicator	Oakland	Los Angeles
Rental Units by Type of Building		
SFH	23.5%	21.1%
Duplex	9.5%	3.6%
3-9	28.1%	21.8%
10+	38.5%	53.1%
Other	0.4%	0.4%
Age of Building with Rental Units		
Pre 1939	33.6%	20.0%
1940-1959	24.2%	24.4%
1960-1979	25.5%	31.5%
After 1980	16.7%	24.1%
All data from the American Community Survey, 2012 5 year estimate		

The above chart shows that the types of rental buildings and their age are very similar. The two important distinctions are that Oakland's rental housing stock is slightly older and that fewer renters in Oakland live in larger rental buildings with more than ten units in the building.

In addition, the demographics of renters in Los Angeles mirror that of those in Oakland:

Figure 8. Demographics of Tenants in Oakland and Los Angeles

Indicator	Oakland	Los Angeles
% Not Citizens (renters and owners)	15.9%	23.1%
Median Rental household income	$34,915	$36,164
% Renters Single Parent Families with children	14.3%	14.3%

% renters below 50K paying more than 30% of income on rent	79.1%	84.0%
All data from the American Community Survey, 2012 5 year estimate		

Oakland renters have similar demographics as Los Angeles. Tenants in Los Angeles and Oakland can be characterized as equally potentially vulnerable to landlord retaliation or displacement as seen by the percentage of the population who are not citizens (used here as a proxy for undocumented residents), and indicators of income and rent burden.

Finally, data from the 2011 AHS show that the levels of habitability issues for rented units in Los Angeles in 1995 prior to the implementation of the SCEP program are similar or worse than for Oakland currently:

Figure 9. Housing Violations in Oakland and Los Angeles

Indicator	Oakland (2011)	Los Angeles (1995)	Los Angeles (2011)
Moderate Physical Problems	5.9%	7.4%	6.8%
Severe Physical Problems	2.5%	2.5%	2.7%
Water leaks inside the unit in the past 12 months	9.4%	13.3%	11.7%
Open cracks or holes in the walls (interior)	6.0%	7.7%	5.0%
Exposed wiring	1.9%	3.2%	1.9%
Data source: American Housing Survey. Moderate or severe physical problems is an index created by HUD from AHS questions. More information on it can be found in the codebook for the AHS. Oakland data is for the entire SMSA which includes Freemont and Hayward. Los Angeles data includes Long Beach and surrounding areas.			

The preceding data shows that Oakland and Los Angeles prior to implementing the SCEP program are remarkably similar in terms of the physical nature of the housing stock and the demographics of the renters. The ability to Los Angeles to implement a PRI program that effectively addressed housing habitability issues means that it should be possible for Oakland to do the same.

Recommendations:

Based on our findings in the report, we recommend that Oakland:

- Implement a PRI ordinance to address habitability issues with the goal of protecting renters.
- Focus the program on areas or buildings with the highest risk as Sacramento currently does and as San Jose is currently considering. Self-certification programs and risk-based targeting focuses on the worst landlord offenders, does not penalize conscientious landlords, and lowers total program costs.
- Include rented single family homes and duplexes in the same way as Sacramento. A PRI program that does not address over 30% of apartments will fail to protect many tenants. Including rented condominiums will also close a potential loophole for landlords.

- Include strong and mandatory tenant relocation assistance to protect tenants who are evicted due to landlord's inability to maintain habitable units. This also incentivizes landlords to fix code violations rather than take units off the market.
- Once an ordinance is passed, we recommend that the program: train inspectors to prioritize tenant protection by focusing on serious habitability concerns instead of minor tenant violations; aggressively market the program to educate landlords and tenants by partnering with real estate associations and tenant advocates; and partner with tenant advocates and other city departments to ensure that at-risk tenants receive the necessary support.

Further study is needed in the following areas:

- What is the best use of penalty monies? They can conceivably be used to remediate blight, provide low cost loans to well-meaning but poorly capitalized landlords, or provide added assistance to displaced tenants.
- Who are the landlords that this ordinance will target? Understanding their business structure ('mom and pop' or real estate corporation?) and capitalization will help model potential responses to better understand how many units may be taken off the market.
- How many illegal units are there? If there are a very large number of illegal units in Oakland this could cause additional problems for tenants and code inspectors.

Appendix A: City of San Francisco Fee Schedules

Figure 10. San Francisco EHS Hotel Fee Schedule

City and County of San Francisco FY 2013-2014
Department Schedule of Licenses, Permits, Fines & Service Charges
Department : Public Health: Environmental Health Section

Hotel Fee Schedule FY 2013-2014

	Number of Rental Units of Hotel	Fee Per Building Per Annum
a	Less than 20 units	$363
b	20-29 units	$426
c	30-39 units	$524
d	40-49 units	$647
e	50-59 units	$849
f	60-99 units	$979
g	100-149 units	$1,055
h	150-175 units	$1,188
i	More than 175 units	$1,399

	Inspector Type	Reinspection Fee: 1st Hour	Reinspection Fee: Additional Fee Per Hour
j	Environmental Health Inspector	$191	$96
k	Environmental Health Technician	$172	$86

Source: "Hotel Fee Schedule." City and County of San Francisco Department of Public Health: Environmental Health Section. FY 2013-214 <http://www.sfdph.org/dph/EH/Fees/Hotel.pdf>

Figure 11. San Francisco EHS Apartment Building Fee Schedule

City and County of San Francisco FY 2013-2014
Department Schedule of Licenses, Permits, Fines & Service Charges
Department : Public Health: Environmental Health Section

Apartment Building Fee Schedule FY 2013-2014

	Number of Rental Units In Apartment Building	Fee Per Building Per Annum
a	3 units	$67
b	4-6 units	$84
c	7-10 units	$114
d	11-15 units	$229
e	16-20 units	$317
f	21-30 units	$449
g	Over 30 units	$528

	Inspector Type	Reinspection Fee: 1st Hour	Reinspection Fee: Additional Fee Per Hour
h	Environmental Health Inspector	$191	$96
i	Environmental Health Technician	$172	$86

Source: "Apartment Fee Schedule." City and County of San Francisco Department of Public Health: Environmental Health Section. FY 2013-2014
<http://www.sfdph.org/dph/EH/Fees/Apartment.pdf>

Appendix B: Changes in Monthly Rent over Time

Figure 12.City of San Francisco Rental Housing – Average Monthly Rent

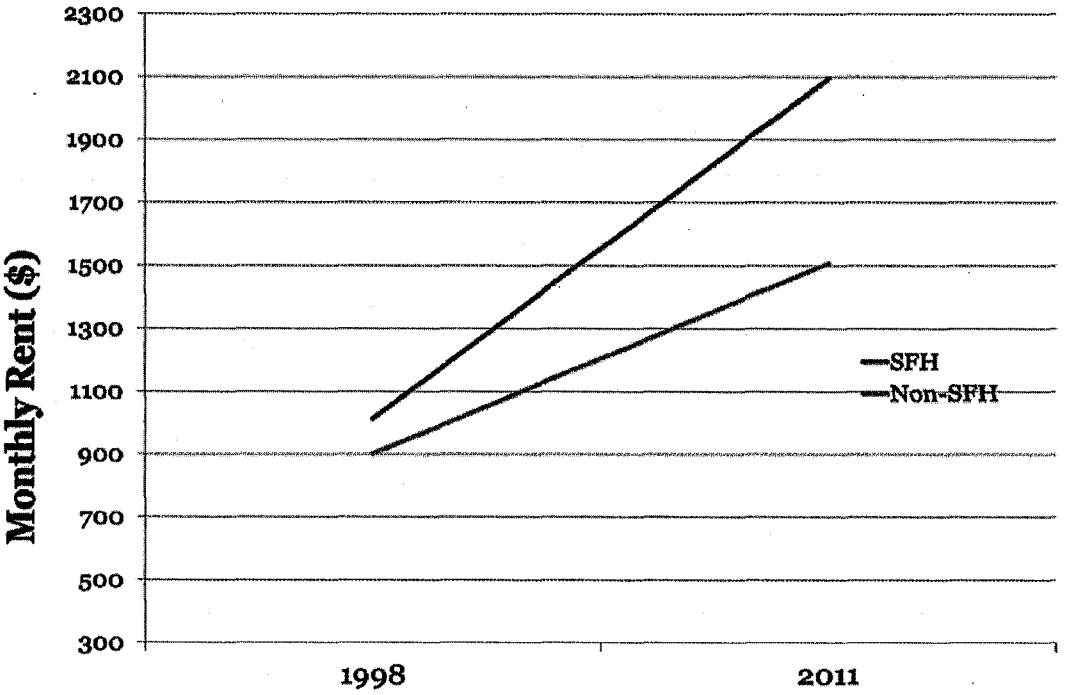
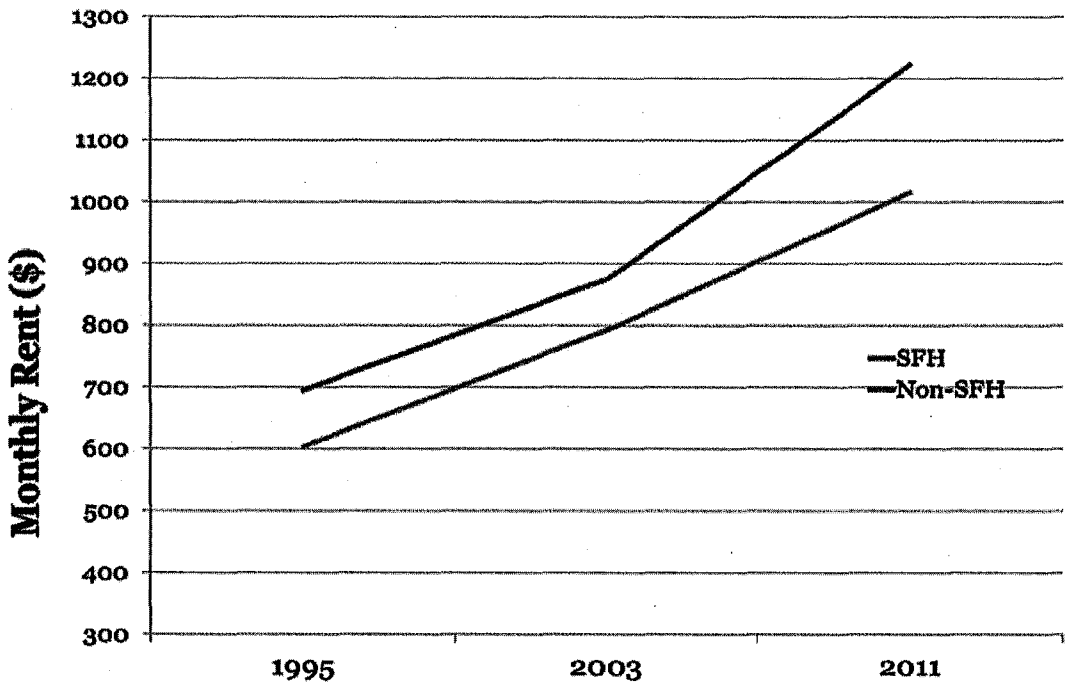


Figure 13.City of Los Angeles Rental Housing – Average Monthly Rent



Appendix C: Statistical Analysis Methodology

AHS Data

AHS data is available sporadically over time and available only at higher level geographical areas. However, we believe that there are enough observations at a sufficient level of detail in the MSAs of interest over time in California to investigate the impact of PRI programs on indicators of housing stock. The data is collected by the federal government and is designed to be comparable between cities and over time.

California AHS Data

Years California Cities Were Sampled by AHS

City (MSA Area)	Year Available: 2008-2011 (n)	Year Available: 2003-2007 (n)	Year Available: 1998-2002 (n)	Year Available: 1995-1997 (n)	Year Available: 1992-1994 (n)
Anaheim-Santa Anna	2011 (3,717)	X	2002 (4,911)	X	1994 (4,410)
Los Angeles-Long Beach	2011 (4,463)	2003 (3,717)	1999[17]	1995 (2,991)	X
Oakland*	2011 (3,522)	X	1998 (4,753)	X	X**
Riverside-San Bernardino-Ontario	2011 (3,083)	X	2002 (5,932)	X	1994 (5,218)
Sacramento	2011 (3,367)	2004 (4,728)	X	1996 (4,158)	X
San Diego	2011 (3,571)	X	2002 (4,872)	X	1994 (4,394)
San Francisco	2011 (3,780)	X	1998 (4,813)	X	1993**
San Jose	2011 (3,495)	X	1998 (4,804)	X	1993**

* Oakland was only sampled as its own MSA starting with the 1998 survey. Data for Oakland before 1998 can be derived from a zone in the San Francisco SMSA.

** Unable at this time to link 1993 data from Oakland, San Francisco, and San Jose within the panel data for these cities.

Date PRI Program Implemented

City (MSA Area)	PRI Implementation Year (Central City)	PRI Implementation Area (Geographic Condition)	PRI Covered Housing Stock
Anaheim-Santa Anna	2014	N/A. Anaheim's 2014 implementation is after the last sample provided by the AHS.	N/A
Los Angeles-Long Beach	1998[18]	LA Center City and Long Beach Center City both implemented programs in 1998 that appear to be similar in structure and apply to the same types of buildings.	Both Los Angeles and Long Beach programs cover all rental units except for rented single family homes.
Oakland	N/A	N/A	N/A

[17] Los Angeles' PRI program was implemented in 1999. Because of the potential conflict in determining when the PRI program was implemented during this year, the observations from this year were removed from our analysis.

[18] This is when the program was implemented following a 1997 blue ribbon commission. However, there were some serious program redesigns that happened that expanded the coverage following a 2001 audit. We feel it is more reasonable to use the 2003 sample as the first year where we can say that the PRI program was in effect.

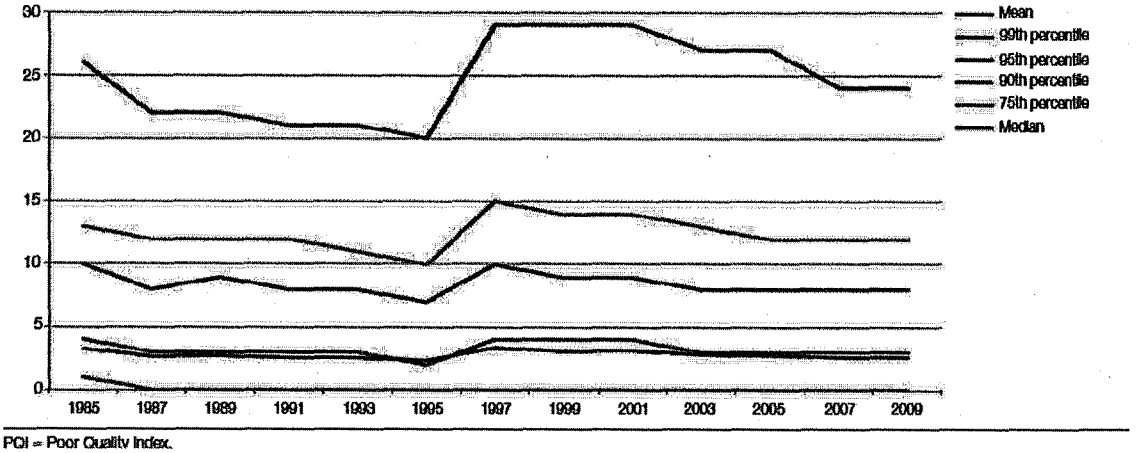
Riverside-San Bernardino-Ontario	1998	San Bernardino City passed a single family home PRI program in 1998.	Covers all rental units.
Sacramento	2008, 1993	The city of Sacramento approved a PRI program in 2008. The county has had a far less aggressive code PRI program since 1993.	Both Sacramento City and County programs cover all rental units.
San Diego	N/A	N/A	N/A
San Francisco	2009	The San Francisco Healthy Housing and Vector Control Program is a PRI program that only inspects the exteriors of buildings and interior common areas.	Covers rental buildings with three or more units in the City of San Francisco.
San Jose	1998	San Jose City implemented a program in 1998.	Covers rental buildings with 3 or more units that were built more than 5 years prior to the time of inspection.

Methodology

Variable Definitions:

- Poor Quality Index (PQI[19]): is a composite index of a number of healthy housing indicators and serves as our primary outcome of interest. Each indicator is given a weight based on the relative harm it represents, and so the sum of these variables will serve as our index. A unit with a higher score has more problems, and a unit with a score of zero has no healthy housing problems. This indicator devised for HUD for use in modeling housing quality with more power than the individual mostly binary variables can provide. It is mostly consistent over time although there does to appear a small trend in scores over time that is related to changes in the survey in 1997.

Figure 2. Trends in PQI Scores During the 1985-Through-2009 Period



PQI = Poor Quality Index.

(Eggers and Moumen, page 8)

[19] Eggers, Frederick J. and Moumen, Fouad, "American Housing Survey: A Measure of (Poor) Housing Quality." Econometrica, Inc. Prepared for U.S HUD- Office of Policy Development and Research. March 2013. <http://www.huduser.org/portal//publications/pdf/AHS_hsg.pdf>

However, because this trend exists over time for all housing units, we do not expect it to interfere with our use of PQI as an outcome. The PQI index comprises 35 different variables related to:

- Electrical breakdowns and exposed wiring
- Heating failures
- Water leaks
- Holes in floors
- Peeling paint and cracks in walls
- Evidence of rodents
- Plumbing and sewage breakdowns
- Structural deficiencies
- Exterior blight conditions
- Elevator breakdowns in larger buildings

- Proactive Rental Inspection Program (PRI): a dummy variable that is 1 if the unit is covered by a PRI program and 0 if not. This is our explanatory variable of interest. Units are included if they are in the central city of a city with a PRI program, and if they meet the age and building size requirements.
- Center City (CenterCity): is a series of dummy variables used to account for the impact of being in a central urban area on housing quality. The dummy returns 1 if the unit is in the central city of interest and 0 if not.
- SFH: a dummy variable for whether or not the unit is in a single family home. Many observers of unit quality remark that larger buildings exhibit fewer code violations since they are professionally managed. Rented single family homes managed by small business owners might lack the capital, expertise, or ability to keep their units up to code.
- Rent: a variable that reports that monthly rent of a unit.
- Year (YR): the year of sampling is included as a control against secular trends in housing quality over time.

Index Definitions:

- i: indexes the observation. Observations are household units.
- t: indexes the year. MSA samples did not occur in the same year for the same cities, but there are at least three observations for each MSA occurring in 2011, sometime between 2002-2004, and sometime between 1993-1998. Data limitations made us unable to include the 1993 sample for this project, but we hope to incorporate it in later analyses. Due to this, San Jose and San Francisco were only evaluated between two time periods while Sacramento and Los Angeles, Long Beach were evaluated for three time periods.

Regression Models:

We will test the hypothesis that PRI program implementation has no effect on housing quality through a series of fixed-effects regressions of the PRI dummy on PQI. The model will start with just PRI and PQI and then add in controls for the size of buildings and their location in the center city or not within each SMSA. The fixed effects model uses each unit as a fixed group to control for any unobservable and unchanging characteristics of those units.

We ran the following regressions for each city:

Appendix D: City of Sacramento Self Certification Checklist

CITY OF SACRAMENTO
RENTAL HOUSING INSPECTION PROGRAM
SELF-CERTIFICATION CHECKLIST
(916) 808-7368

PROPERTY ADDRESS:	PROPERTY NAME (IF APPLICABLE)	DATE	NO. OF UNITS

Owners of rental housing properties in the Self-certification Program must certify each and every rental housing unit on the property at least once every calendar year and upon each change in tenancy. Self-certification requires the following:

- **Inspect each rental housing unit on the property for compliance with this checklist;**
- **Immediately make any repairs to the rental housing unit in order to achieve compliance with the requirements of this checklist;**
- **Upon completion of this checklist, provide a copy of the completed checklist to the occupants of the corresponding rental housing unit and keep the original checklist on file; and**
- **Immediately notify the City of Sacramento Code Enforcement Department if any rental housing unit cannot be self-certified because necessary repairs cannot or will not be made.**

Inspection of Unit Number:_____

Check the box next to each item or area that is inspected and found to be in compliance. Please use a separate Self-Certification Checklist form for each rental housing unit inspected.

☐ 1. **Premises** – No abandoned or inoperable vehicles, overgrown vegetation, infestation of insects or vermin, discarded household items, trash, debris or any graffiti.	☐ 8. **Common Areas**- In a safe and sanitary condition.	☐ 15. **Water heaters** – Water heaters are installed in an approved location, and have seismic strapping, operable temperature relief valve & drain line, venting, and a minimum 120 degrees water temperature.
☐ 2. **Exterior walls** – In good condition, no peeling paint, holes, missing sections or deterioration.	☐ 9. **Entry doors** – All doors and door jambs have strike plates that are secure, not loose; entry doors have a standard deadbolt with thumb latch at interior, a viewer, and are weather sealed.	☐ 16. **Bathroom ventilation** – Bathrooms have operable window or exhaust fan.
☐ 3. **Vent screens**- No missing or damaged crawl space, attic or foundation vent screens.	☐10. **Windows and window locks** – Windows can be opened and closed easily, and have no missing or broken glazing. Bedroom egress windows are not blocked by furniture or air conditioners, and any security bars can be released from the interior.	☐ 17. **Smoke detectors** – Smoke detectors are working, and are located in hallways leading to rooms used for sleeping purposes or are installed and maintained in compliance with the Code in effect at the time of their original installation.
☐ 4. **Stairway/landing/treads/risers/guardrails/ handrails** – In good condition, well secured, not loose or deteriorated.	☐ 11. **Heaters** – Are permanently installed and properly functioning.	☐ 18. **Electrical**-General outlets, lights, switches and cover plates are installed properly and in good condition, no exposed wiring.
☐ 5. **Roof and ceilings** – In good condition without any leaks.	☐ 12. **Kitchen counters and sink surfaces** – Surfaces are in good condition, no significant cracked, chipped or missing pieces.	☐ 19. **GFCI required locations** – GFCI properly function and have been installed where outlets have been replaced in the bathrooms, on kitchen counters, on the exterior and in garages.
☐ 6. **Exterior lighting** – All lights function and have proper covers, no exposed wiring.	☐ 13. **Floor coverings**- Coverings do not create tripping hazards or unsanitary conditions.	☐ 20. **Carbon Monoxide detectors** –located outside each sleeping area & on each level of a dwelling (including basements). Installation must be per manufacturer's instructions and per California Building Code.
☐ 7. **Electrical panel** – Multi-unit panels are identified, all breakers/fuses are labeled and there is no exposed wiring.	☐ 14. **Plumbing fixtures/piping**– Properly installed and in good condition without any leaks or clogs, no missing handles or spouts.	

I certify that I have inspected the aforementioned unit and that the unit complies with all the checklist items listed above. In addition, I have provided a copy of this completed checklist to the occupants of the unit inspected.

_____ _____
Printed Name of Owner or Owner's Representative Signature of Owner or Owner's Representative

Date:_____

Rev. 8/31/2011

Source: "Rental Housing Inspection Program: Self-Certification Checklist." City of Sacramento. August 31, 2011. <http://portal.cityofsacramento.org/~/media/Files/CDD/Code%20Compliance/Programs/Rental%20Housing/RHIPInspectionChecklistSampleCopy.pdf>

Appendix E: Comparison of Proactive Rental Inspection Programs in California Cities

Comparison of Proactive Rental Inspection Programs in California Cities

	City of San Jose	City of Los Angeles	City of San Francisco	City of Sacramento
Program Name	Multiple Inspection Program	Systemic Code Enforcement Program (SCEP)	Healthy Housing and Vector Control Program	Residential Housing Inspection Program (RHIP)
Municipal Code Section	San Jose MC 17.20.500 et seq.	Los Angeles City Council Ordinance No. 172,109	San Francisco Health Code Sections 609 et seq.	Chapter 8.120 et seq. of the Sacramento City Code
Properties Covered	3 or more unit apartment buildings. Also includes: emergency residential shelters, guesthouses, motels/hotels, residential care facilities for more than 7 people, residential service facilities, and fraternity and sorority houses.	All residential rental properties with two (2) or more units	Hotels (inc. Single Room Occupancy (SRO)); Multi-Family Buildings (3+ units)	All Residential Rental Properties are covered
Eligibility requirements for exemptions from inspection	N/A (not totally sure if new buildings are covered or if owner occupied rental units are either)	Owner Occupied	Owner-Occupied; Condominiums	Owner-occupied units, properties five years old or less, properties in escrow (for sale) or units that are routinely inspected by other local agencies.
Building targeting scheme	N/A	N/A	SRO; Exterior and Common Areas of Multi-Family Units	If a unit fails an inspection while in the Self-Certification Program, they are automatically inspected the next year.
Notice and Access	Exterior and interior, full inspection	Exterior and interior, full inspection	Full Inspection for SRO; Exterior and Common Areas for MFH (3+ units)	Exterior and interior, full inspection
Inspection Coverage	Exterior and interior, full inspection	Exterior and interior, full inspection	Full Inspection for SRO; Exterior and Common Areas for MFH (3+ units)	Exterior and interior, full inspection
Frequency of inspection	6 year cycle	4 year cycle	SRO: Annually MFH: Once every 3 years (only exterior and common areas)	All units every 5 years; Landlords are allowed to opt into Self-Inspection Program after a passed

Number of units and properties covered in City	Approx. 4,400 properties, 6,600 buildings, 85,000 units	~817,000 units	17,000 Apartment complexes; 500 Hotels	~89,500 units
Percentage of Units Inspected	50% in 3-10 unit buildings, 25% of 11-50 unit buildings, 10% if building has 50+ units	100%	100%	10% of Self-Certified Units annually; All newly registered units
Annual registration or permitting fee	$43.81	$43.32	Depends on size: Apartment: $67-$528; Hotel: $363-$1,399	$16 annually; $127 for initial inspection
Reinspection fee structure	$192	One reinspection fee covered in program fee	Inspector: $191/hr; Technician:$172/hr	$127
Penalty structure	Administrative Citation Schedule	Administrative Citation Schedule	$1,000 per day after Compliance Hearing	Administrative Citation Schedule Follows State Law on placing liens
FTE inspectors, cost per inspector	11 FTE budgeted. $75,000 - $100,000 salary per inspector, $90,000-$115,000 Manager for manager.	79 Building inspectors (2013), range from mid 80K to low 100K. Mean $95,000	17 inspectors; 2.5 FTE for Hotels only; Approx. $87,000 - $106,000 per inspector	5 inspectors; $52,000-$73,000 per inspector
Properties inspected annually	Average 343 properties inspected per inspector per year (Range: 606-129). Half were proactive. Approx. 12,000 units inspected in 2012-13.	Approx. 180,000	500 Hotels Approx. 5,600 Apartment Buildings	~8,950 units through random inspection
Annual Budget Info	Approx. 3 million, budget surpluses recently due to unfilled information.	Approx. $35 million	Approx. $2.5 million (Department of Public Health)	Approx. $7.5 million (Code Enforcement Budget)
Tenant Information	Tenants are not informed of code violations, nor are they informed that an inspection has taken place or when it is scheduled for.	Significant Government and Advocate outreach	Online Database of Rental violations	Roles and Responsibilities form signed by both tenant and landlord; tenant has copy of self-certification results
Relocation Assistance for Displaced Tenants	Yes: when tenants are displaced for code violations, landlords are responsible for relocation assistance. For temporary relocation (less than 60 days), owner is responsible for providing similar housing at no additional cost to tenants. In the case	If a tenant is forced to relocate, landlords are required to provide financial assistance to the tenant based upon a calculation determined by SCEP. This amount can range from approximately $8,000 for a couple; to nearly $20,000 for a	Tenants are referred to the Rent Control Board for further action.	Officials with RHIP have said that this has been successful in motivating the landlord to correct the violation. In the instances were the tenant was relocated, the landlord was required to provide housing for the tenant either in the

of long term (greater than 60 days) or permanent relocation, the owner is responsible for the greater of three months of fair market rent or the rent of the closed unit. The landlord is also responsible for transportation expenses, employment costs, and the safety of the tenant's belongings.	family of four.		building or at a hotel or motel. Code enforcement officials verify that this assistance has taken place and will escalate the issue if the situation requires.

Sources:

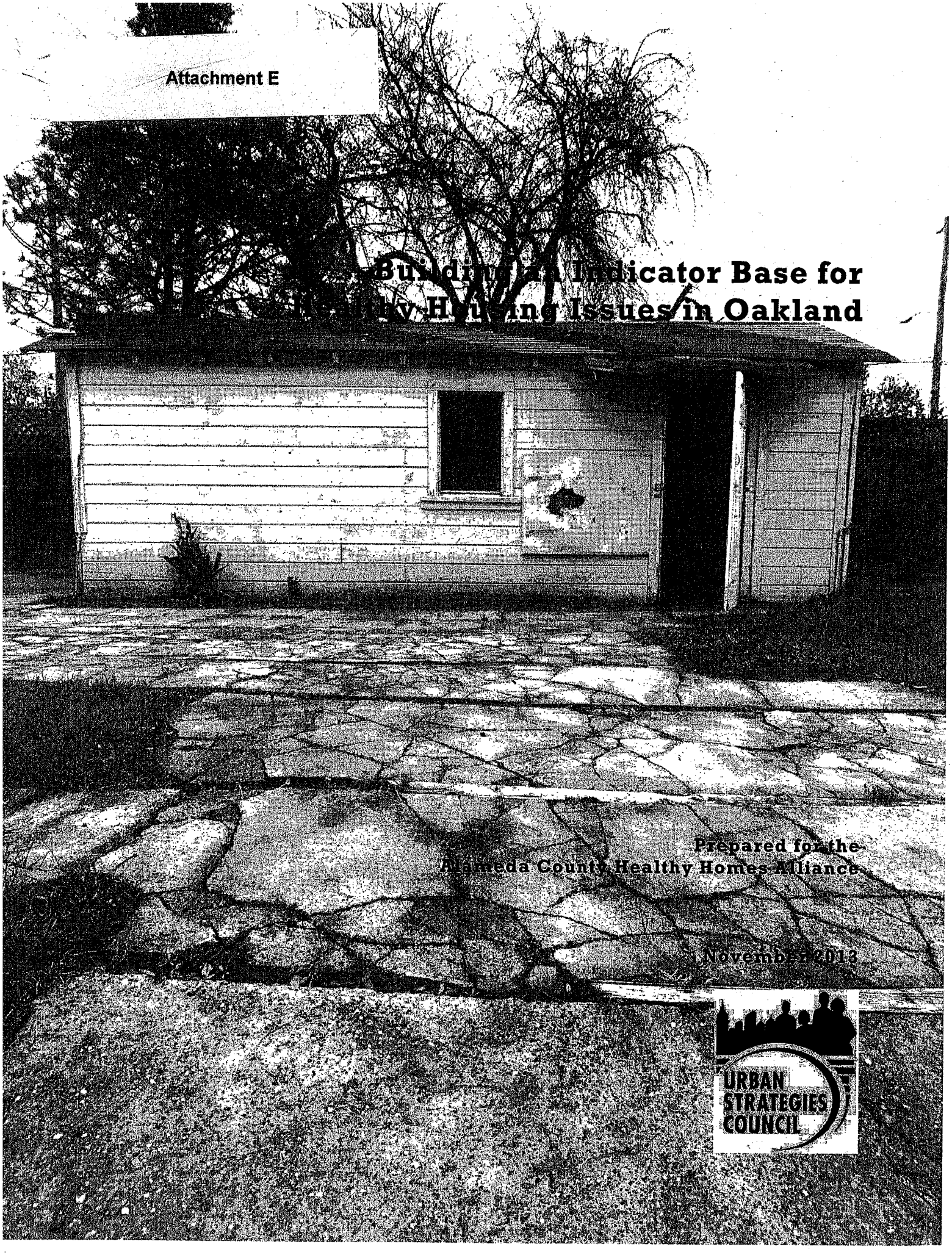
City of San Jose:
Salaries: "City of San Jose Pay Plan." City of San Jose. June 22, 2014. <http://www.sanjoseca.gov/DocumentCenter/View/1206>
General: "Code Enforcement: Improvements Are Possible, But Resources Are Significant Constrained." November 2013. <http://www.sanjoseca.gov/DocumentCenter/View/23918>
Units Inspected: "Annual Report on City Government Performance." City of San Jose. Office of the City Auditor. December 2013. <http://www.sanjoseca.gov/DocumentCenter/View/24941>
"An Audit of the Multiple Housing Inspection Program." City of San Jose. August 1999. < https://www.sanjoseca.gov/DocumentCenter/View/20895>
Administrative Fine Schedule: "Administrative Fine Schedule." City of San Jose. April 8, 2013. <https://www.sanjoseca.gov/DocumentCenter/View/11697>

City of Los Angeles:
Salaries: "Department of Water and Power City Employee Salary Data 2010-2013." City of Los Angeles. Accessed April 2014. <http://controller.lacity.org/Salary_Information/index.htm>
Budget: "Budget for the Fiscal Year 2013-2014." City of Los Angeles. Page 137. < http://cao.lacity.org/budget13-14/2013-14Proposed_Budget.pdf>
General: "Systematic Code Enforcement Program." Los Angeles Housing and Community Investment Department. Accessed May 2014. <http://lahd.lacity.org/lahdinternet/CEUSCEP/tabid/395/language/en-US/Default.aspx>

City of San Francisco:
Hotel Fee Schedule: "Hotel Fee Schedule." City and County of San Francisco Department of Public Health: Environmental Health Section. FY 2013-214 <http://www.sfdph.org/dph/EH/Fees/Hotel.pdf>
Apartment Fee Schedule: "Apartment Fee Schedule." City and County of San Francisco Department of Public Health: Environmental Health Section. FY 2013-2014 <http://www.sfdph.org/dph/EH/Fees/Apartment.pdf>
City Budget: "Budget and Appropriation Ordinance FY 2014-2015." City and County of San Francisco. File No. 130535. Ordinance No. 159-13. Page. 196. <http://sfcontroller.org/modules/showdocument.aspx?documentid=4497>
Salaries: "Compensation Manual FY 2013-2014." City and County of San Francisco. August 29, 2013. <http://www.sfdhr.org/Modules/ShowDocument.aspx?documentid=13622>

City of Sacramento:
Salaries: "Salary Schedule." City of Sacramento. June 28, 2014. <http://portal.cityofsacramento.org/~/media/Files/HR/Career/Salary_Schedule.pdf>
General: "Residential Housing Inspection Program." City of Sacramento-Community Development Department/ <http://portal.cityofsacramento.org/Community-Development/Code-Compliance/Programs/Rental-Housing>
Community Development Department Budget (pg. 127): "FY2013/14 Budget: Section-10 Community Development." City of Sacramento. <http://portal.cityofsacramento.org/~/media/Files/Finance/Budget/2013-14Budget/11_Community_Development.pdf>

Attachment E



Building an Indicator Base for Healthy Housing Issues in Oakland

Prepared for the
Alameda County Healthy Homes Alliance

November 2013

URBAN STRATEGIES COUNCIL

Urban Strategies Council is a social impact organization that uses research, policy, innovation, and collaboration to achieve equity and social justice. The Council's mission is to eliminate persistent poverty by working with partners to transform low-income neighborhoods into vibrant, healthy communities.

Authors:
Steve King
Steve Spiker
John Garvey
Nic Aulston

Urban Strategies Council
1720 Broadway, 2nd Floor
Oakland, California 94612
www.urbanstrategies.org

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Introduction

Project Overview

In late 2012, the steering committee of the Alameda County Healthy Homes Alliance (the Alliance) initiated a dialogue with Urban Strategies Council (the Council) about establishing a set of neighborhood level indicators that could help elucidate the connections between the health of Oakland residents and the homes they inhabit. Over the course of nearly one year, the Council worked with the Alliance to develop a research plan, refine a list of key indicators, and ultimately compile and analyze a broad array of data that will inform the policy efforts and strategic directions of the Alliance. This report is the concluding product of that fruitful partnership.

Scope of Research

We know intuitively and empirically that where you live has a profound impact on your well-being. At many different scales, geography and place leave an imprint on your physical and mental health—whether it is the policies of your home country or state, the quality of air surrounding your neighborhood, the perceived safety of the block around your home, or the structural integrity of your own residence. These various scales are not mutually exclusive; instead, they overlap to contribute to lived experiences for people in very specific places. For this report, our research necessarily spans these scales, but the real targets of our analysis are those metrics that lay at the intersection between housing units in Oakland and the health of their inhabitants.

A well-established body of academic, clinical, and community-level research has demonstrated that conditions within housing units can deeply impact the physical and mental health of individuals in those units, for better or worse. In many areas, the literature is conclusive: just as a dilapidated apartment with a cockroach problem can trigger asthma in a vulnerable child, so too can a well-maintained and properly managed apartment contribute to the positive well-being of its tenant. And so the goal of this report is not to provide evidence that these housing-health connections exist, but rather to compile an array of data so as to operationalize existing research locally for Oakland.

The report begins with a brief overview of several demographic indicators related to the race, ethnicity, and socio-economic status of Oakland residents. This is followed by a look at several important health outcomes that have a close connection to the built environment, and which vary substantially across Oakland neighborhoods. The remaining four sections of the report cover various aspects of the housing stock in Oakland, from age, density and tenure types, to affordability, habitability and quality.

A Note about Data

Using the existing literature as a point of departure, Urban Strategies Council fashioned a long list of potential relevant indicators. The types of data that could inform a study such as this are numerous;

however, the availability of those data has been a significant limiting factor. To effectively and accurately tell a story about a specific city, local data are of paramount importance. Yet reliable local data can be exceedingly scarce, particularly at a neighborhood or individual record level.

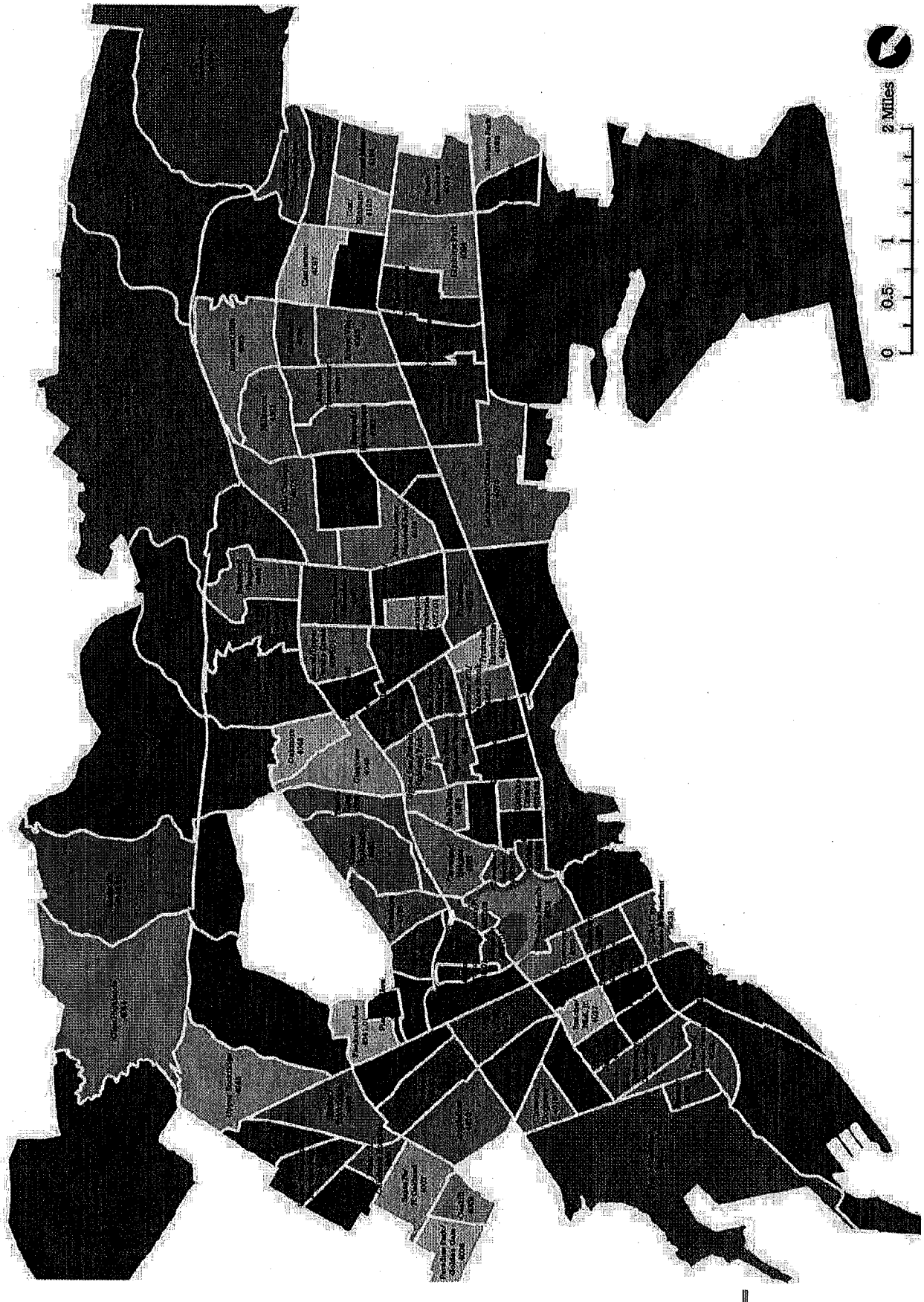
One specific reason for the lack of quality local data is the fact that the U.S. Census has greatly scaled back the types of detailed information collected during the decennial Census. In its place, the American Community Survey (ACS) publishes one, three, and five-year estimates of relevant metrics at various geographic levels. At the neighborhood level (Census tract or smaller), this ACS data is—in nearly every instance—highly problematic and fraught with error, despite its widespread (mis)use.

This unfortunate reality has made the collection and accessibility of locally produced data—as opposed to state or national administrative datasets—much more important to understanding neighborhood level phenomena. Such fine grained information is particularly crucial to making informed, data-driven decisions related to local policies or targeted outreach to specific subpopulations.

It follows that we have attempted to collect as much neighborhood level data as possible. In most instances, data are either originally reported at the Census tract level, or we have chosen to aggregate raw data to the Census tract level. In several instances, we have had to resort to using data reported at the zip code, or even metropolitan statistical area.

As the majority of data in the report are at Census tract geographies, we created a map showing Census tracts with approximate neighborhood names for use as a reference (see Map 1). Note that there is little consensus in Oakland over neighborhood names and boundaries; Map 1 is simply provided as a guide to orient the reader to Oakland's Census tracts.

Map 1: Oakland Census Tracts/Neighborhoods



Demographics

Race and Ethnicity

While this report is largely focused on data about housing, the residents whose health may be impacted by housing provide the overarching impetus for this analysis. According to the 2010 U.S. Census, Oakland is home to 390,724 residents. These people come from a variety of backgrounds and live in equally diverse array of neighborhoods. This section explores the diversity of Oakland's residents, and the places where they live in the City.

The underlying rationale for beginning with race and ethnicity and other socio-economic indicators is that research has shown that low-income households and communities of color disproportionately live in substandard housing. There is not a causal link, but it is important to be cognizant of specific groups or neighborhoods that may bear the brunt of unhealthy housing issues.

In a recent study conducted by Brown University[1], Oakland was ranked the fifth most diverse city in the United States. This diversity is expressed in historic neighborhoods with strong cultural identities. The following sequence of maps uses data from the 2010 U.S. Census to explore these different neighborhoods and highlight Oakland's four largest racial and ethnic identities: African-American or Black, White, Hispanic or Latino, and Asian.

African-American or Black – 27.3% of all residents
Oakland has the second largest Black or African-American population of all cities in California. In 2010, 106,637 Black or African-American people lived in Oakland. While West and East Oakland are home to Oakland's traditional Black neighborhoods, the reality is that Black residents are spread across Oakland's flatland neighborhoods, as well as the East Oakland hills (see Map 2). Between 2000 and 2010, there was a 23 percent decline in Oakland's Black population; Black residents now represent 27 percent of the population in Oakland, compared to over 35 percent in 2000.

White – 25.9% of all residents
Map 3 shows the concentration of residents identifying as White throughout Oakland by Census tract. Visually, the map is nearly an inverse of Map 2, which displayed the African-American population across the City. With the exception of Jack London Square and the neighborhoods around Lake Merritt, there is a uniformly low concentration of White residents throughout Oakland's flatland neighborhoods. At least two out of three residents in neighborhoods like Piedmont, Trestle Glen, Montclair, and Rockridge identified as White. In 2010, 20 Census tracts (15 percent of all tracts in Oakland) had more than 70 percent of residents being White.

Hispanic or Latino – 25.4% of all residents
The Fruitvale neighborhood has long been the traditional neighborhood for Hispanic or Latino residents in Oakland. In the 2010 Census, 74.8 percent of residents in this district identified as Hispanic or Latino. However, the growth of the Hispanic population has resulted in an expansion of neighborhoods where Hispanic residents are living in Oakland. In particular, the flatland neighborhoods from the Fruitvale to the

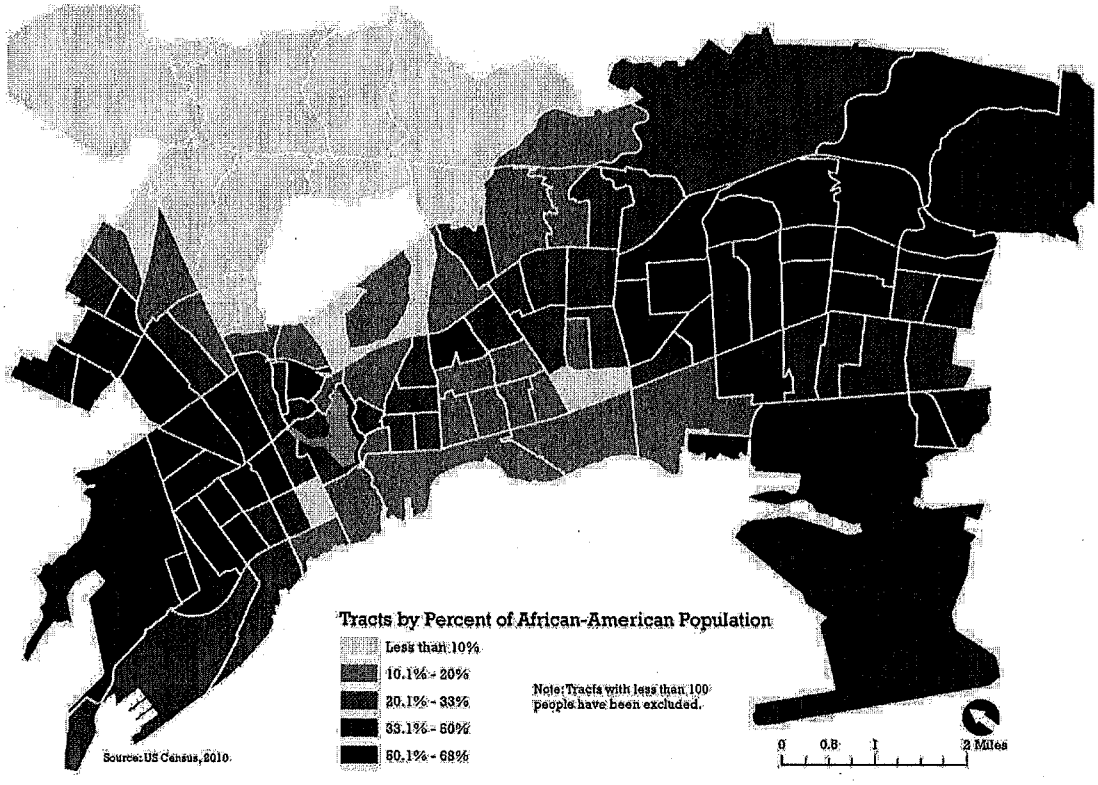
[1] http://www.s4.brown.edu/us2010/Data/Report/report08292012.pdf (Last visited 10/28/2013)

East Oakland border with San Leandro have seen a significant rise in the Hispanic population (see Map 4). In the East Oakland flatland tracts east of High Street, there was a 26 percent increase in the Hispanic population between 2000 and 2010; this population growth is evident in the high concentration of Hispanic residents around Elmhurst, Brookfield Village, and Stonehurst.

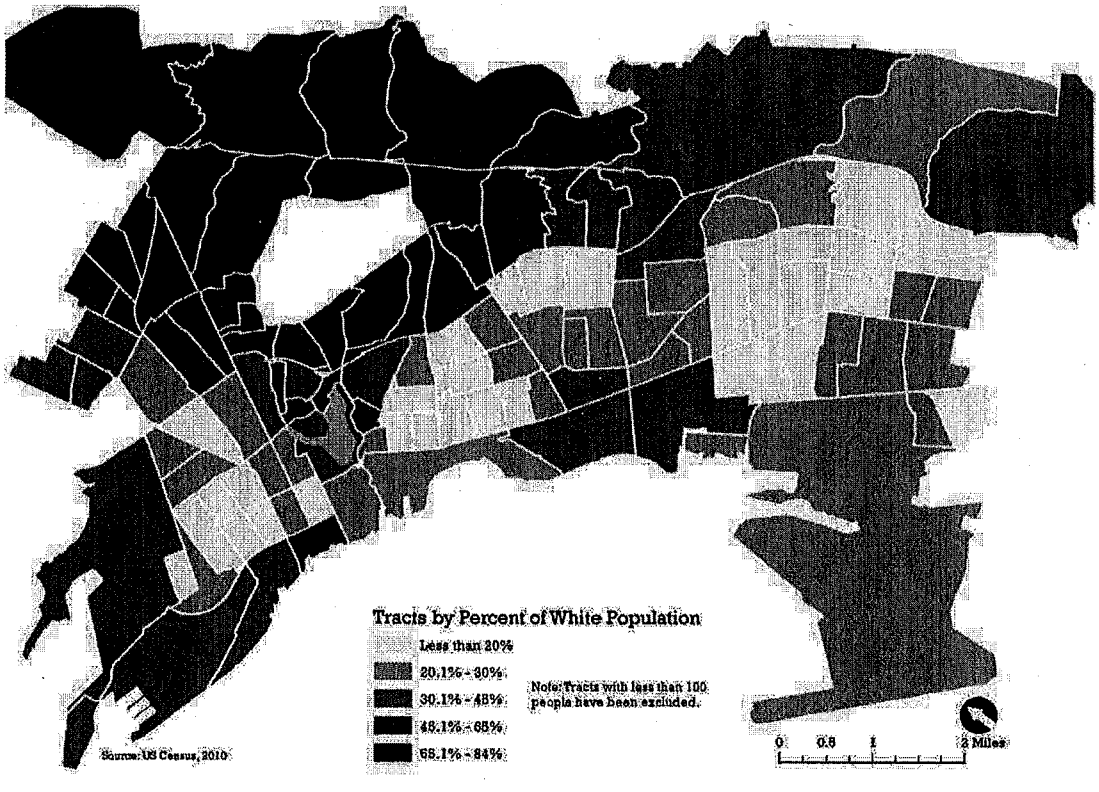
Asian – 16.7% of all residents

Asian residents are highly concentrated among several neighborhoods around downtown Oakland and extending east around Lake Merritt, particularly Eastlake and the lower San Antonio (see Map 5). In the Chinatown district adjacent to downtown, 88.7% of the 2,788 residents identified as Asian in the 2010 Census. These neighborhoods with particularly high concentrations of Asian residents are quite diverse in themselves, with a mix of residents of Chinese, Vietnamese, Laotian, and Cambodian decent. Asian residents rarely constitute the majority of the population within a given Census tract—only six Census tracts in Oakland have a majority of Asian residents compared to 41 tracts with a majority of White residents.

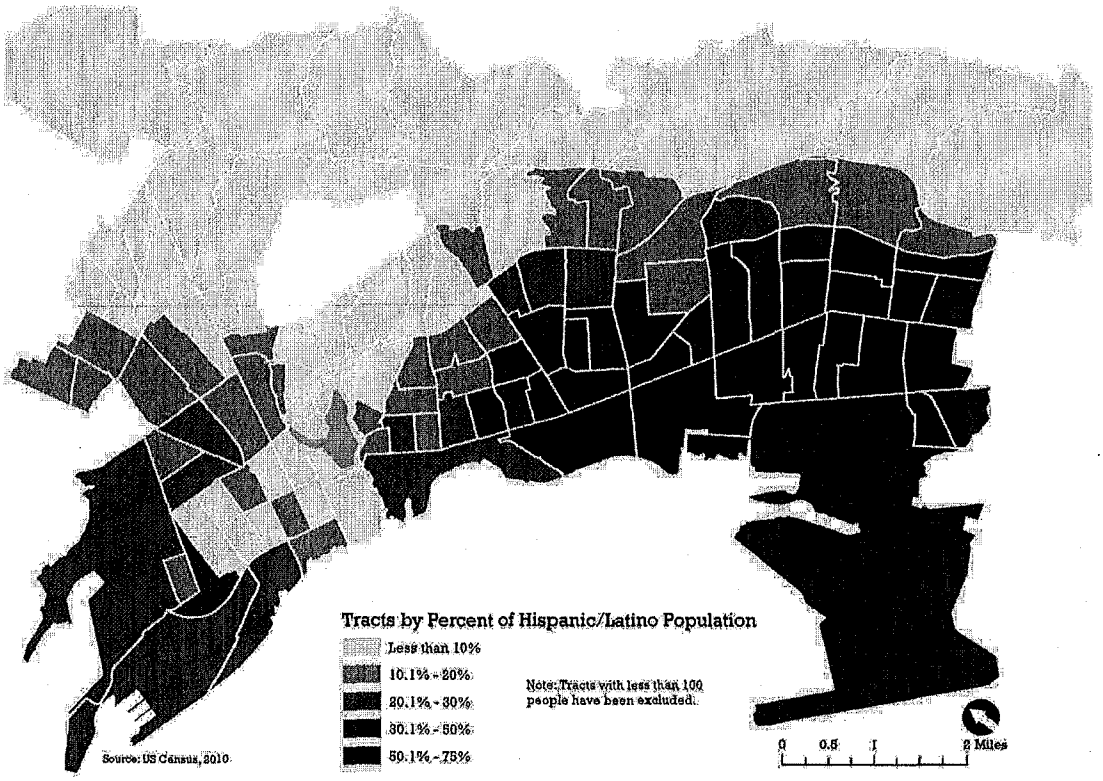
Map 2: Percentage of African American Population by Census Tract, 2010



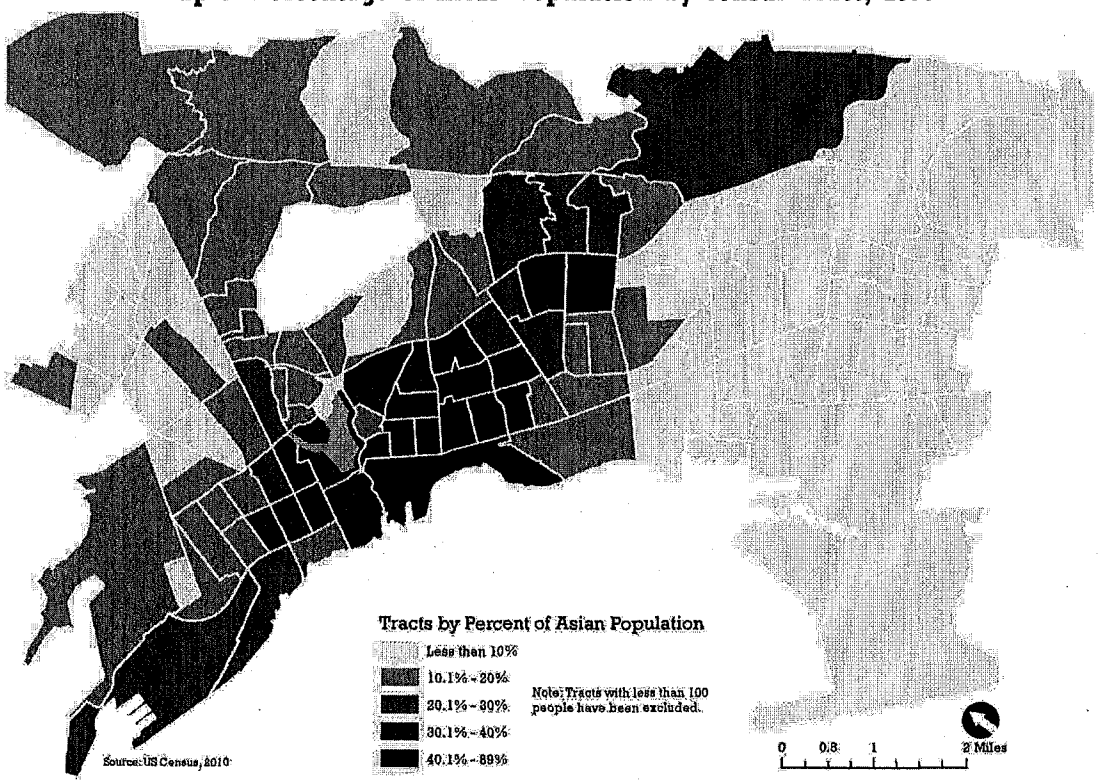
Map 3: Percentage of White Population by Census Tract, 2010



Map 4: Percentage of Hispanic/Latino Population by Census Tract, 2010



Map 5: Percentage of Asian Population by Census Tract, 2010



Socio-Economic Indicators

We know that housing quality—or lack thereof—has been shown to be closely linked to socioeconomic circumstances. Equally, we are becoming aware of the traumatic impact that the stresses of living in poverty can have on the health outcomes of residents. This is particularly true for children whose positive growth and development is impacted by the harsh realities of growing up poor.

Our ability to measure poverty is hindered by the unfortunate quality of local data provided by the U.S. Census – the traditional source of poverty data. Instead, this report utilizes data provided by the Alameda County Social Services Agency that shows enrollment counts into social safety net programs. One of the primary eligibility requirements for these programs is income. And while these data provide a rich local source of information, they also are not perfect. Enrollment counts into these programs cannot be used as an exact proxy for poverty, as not all eligible residents actually enroll in the programs. It is widely understood that the need and eligible populations for these social programs far surpass enrollment.

With that said, even a cursory analysis of this data illustrates that only looking at citywide data obscures the real disparities between Oakland neighborhoods. Oakland is home to both affluent neighborhoods of low-density housing and manicured yards, as well as poor communities with modest homes on small lots. The lived experiences of residents within these two neighborhood types are very different. This dichotomy in Oakland is manifested in the City's topography: the affluent, predominately White neighborhoods among the hills, and the low-income communities and communities of color spread throughout the City's flatland neighborhoods.

Maps 6 through 9—which display enrollment into CalWORKs, CalFresh, and Medi-Cal, respectively—consistently illustrate higher enrollment rates throughout the flatland communities of Oakland compared to those areas in the hills. Within the flatlands, enrollment rates are highest in West Oakland and East Oakland, with additional concentrations of Medi-Cal enrollees in the San Antonio and Fruitvale. In some neighborhoods, as many as one in three adults were enrolled in Medi-Cal, a program to provide health insurance to low-income residents. This startling fact is particularly pronounced for children: 14 Census tracts in Oakland have at least 900 children enrolled in Medi-Cal, with three tracts in the Fruitvale, Havenscourt, and Coliseum areas having more than 1,500 children enrolled in Medi-Cal.

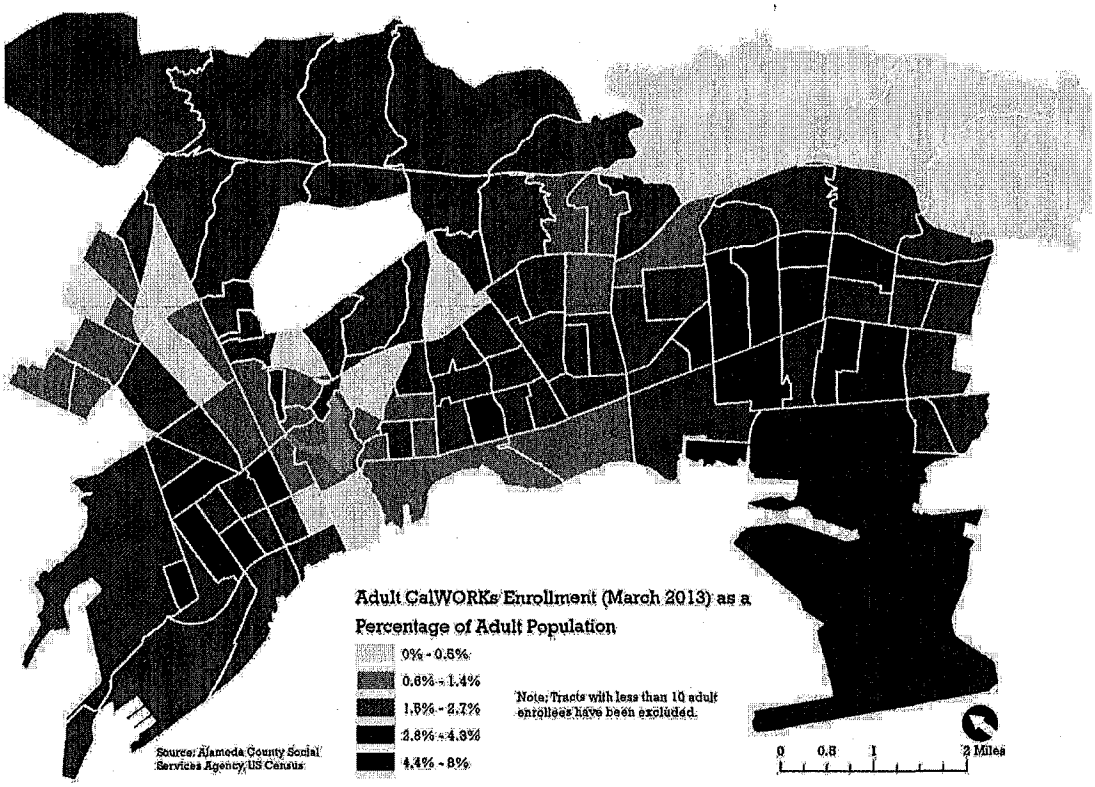
Basic Descriptions of Programs

CalWORKs is California's implementation of the federal Temporary Assistance for Needy Families (TANF) program, a cash aid program for eligible families. Eligibility is based largely on income and employment status of the principal earner in a family, as well as special needs requirements for family members.

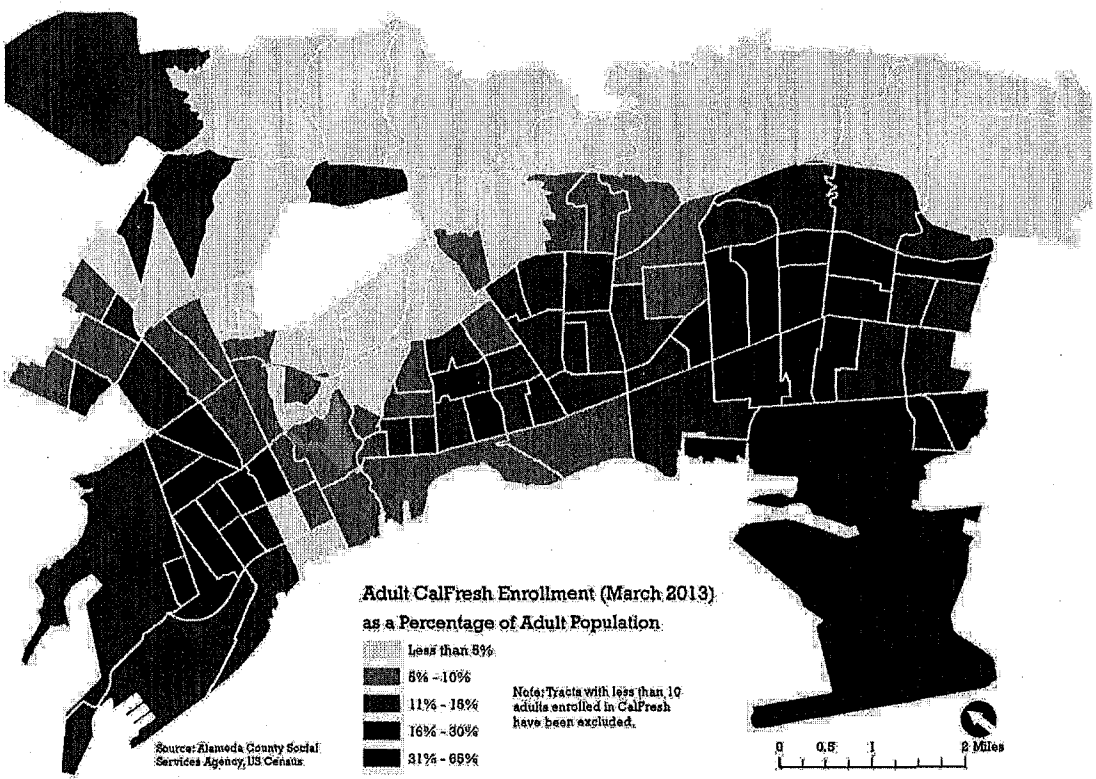
CalFresh is federally known as the Supplemental Nutrition Assistance Program (SNAP), or food stamps. Eligibility for this program is largely based upon household income. Generally, the maximum gross income limit is 130% of the federal poverty level; for 2013, the federal poverty level for a family of four is $23,550.

Medi-Cal provides health coverage for people with low-incomes and limited ability to pay for health coverage.

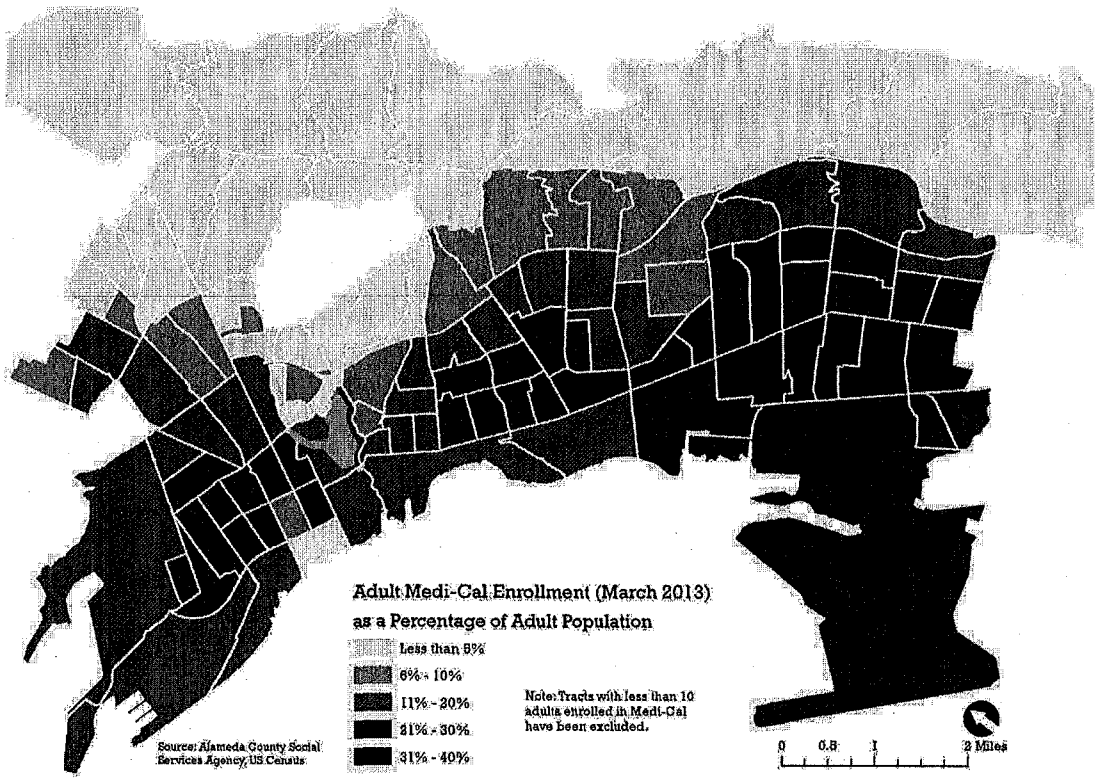
Map 6: Percentage of Adult Population Enrolled in CalWORKs by Census Tract, March 2013



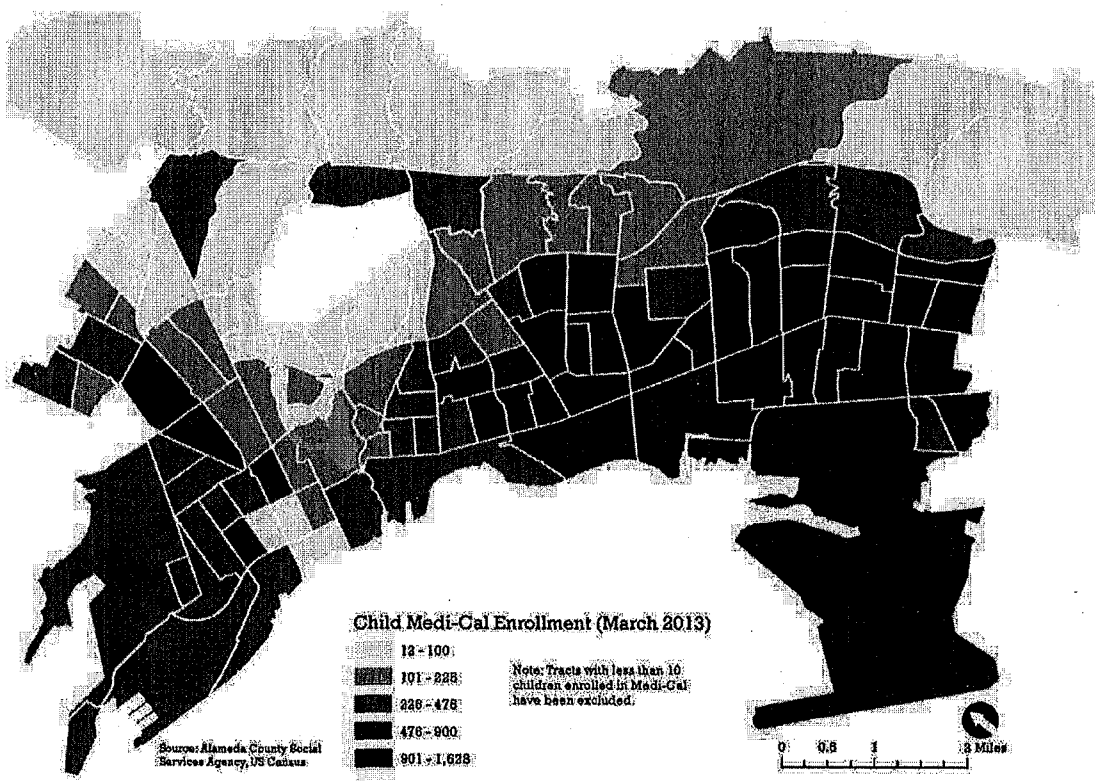
Map 7: Percentage of Adult Population Enrolled in CalFresh by Census Tract, March 2013



Map 8: Percentage of Adult Population Enrolled in Medi-Cal by Census Tract, March 2013



Map 9: Number of Children Enrolled in Medi-Cal by Census Tract, March 2013



Population Density

Population density is a measure of the number of people within a specific geographically defined area. The calculation of population densities allows for the comparison of populations in different geographies, in addition to highlighting where concentrations of people live.

Citywide, Oakland has a relatively low population density of around 7,000 people per square mile. Although the citywide density is low due to the hill communities, expansive parks in the hills, and large Port of Oakland properties, there are neighborhoods in Oakland with notably high population densities (see Map 10). The Adams Point, Eastlake, lower San Antonio and Fruitvale neighborhoods all have densities above 25,000 people per square mile, and as high as 39,000 people per square mile. For comparison, New York City has an overall population density of nearly 27,000 people per square mile, while San Francisco has a density of 17,246 people per square mile.

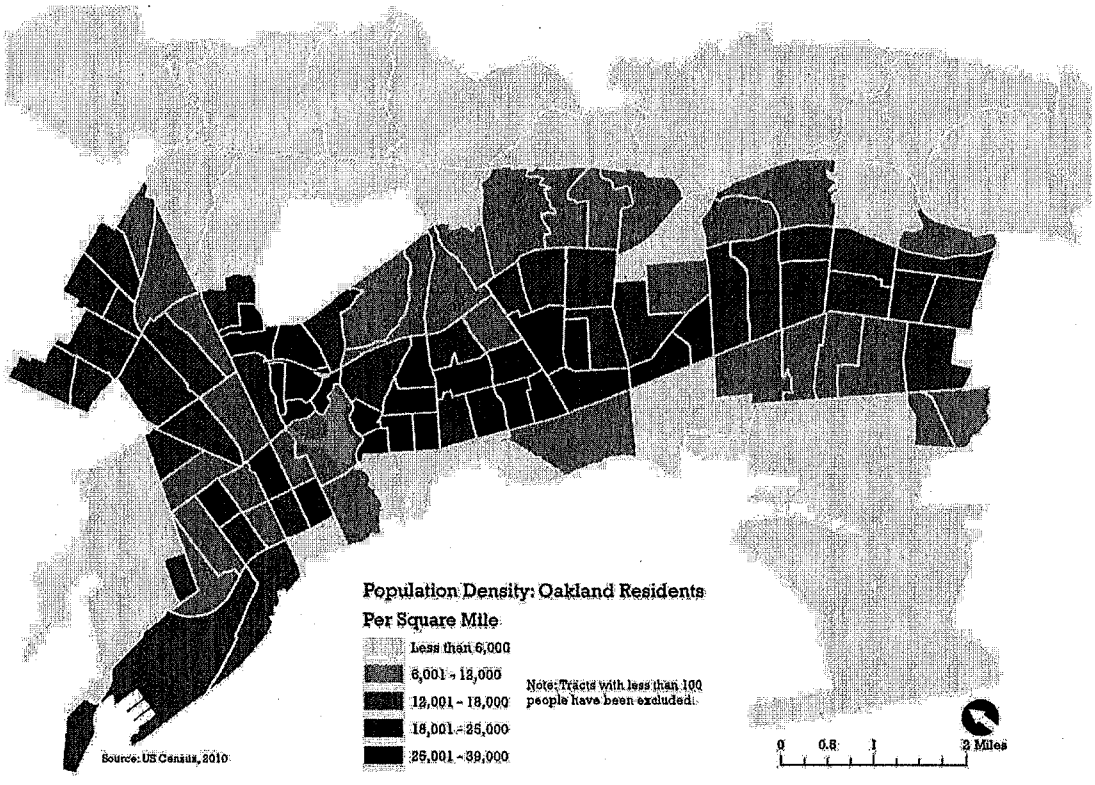
The population density pattern changes when looking specifically at the population of children under the age of 18 in Oakland (see Map 11). The communities north of Lake Merritt, although having relatively high population densities, are mainly composed of adults. The flatland communities stretching from the San Antonio to East Oakland have particularly high densities of children compared to the rest of Oakland.

Age

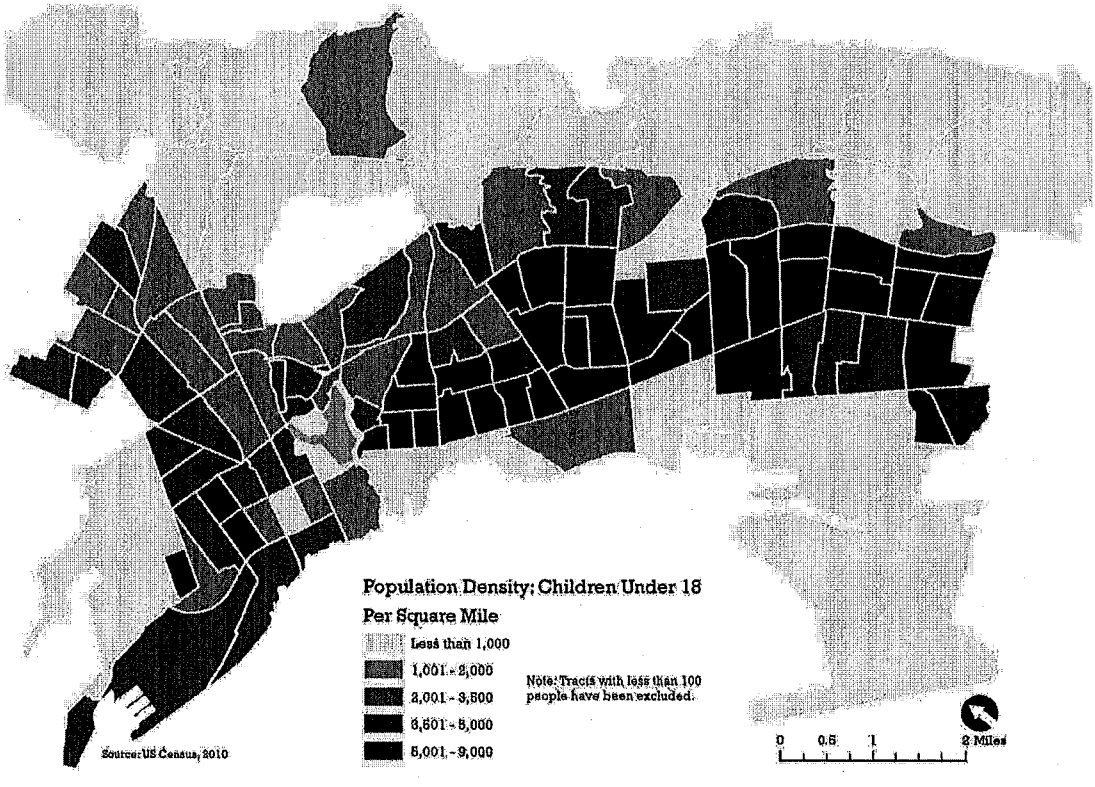
Between 2000 and 2010, the median age in Oakland increased from 33.3 to 36.2 years old. This is driven by three factors: the large decrease in the number of children in Oakland; the baby boom generation moving towards the retirement age of 65; and the small increase in the number of residents over 65 years old.

In 2010, there were 16,639 less children in Oakland than in 2000, a 20 percent decrease. This decrease is one and a half times more than Emeryville's entire population of 10,080 people. This decline in children is different neighborhood to neighborhood. In West Oakland, there was a 31 percent decrease in the number of school-aged children during the same time period. Even with this decline, Oakland was still the home for 83,120 children in 2010.

Map 10: Density of Oakland Residents Per Square Mile, by Census Tract



Map 11: Density of Oakland Children (Under Age 18) Per Square Mile, by Census Tract



Health Outcomes

In a city such as Oakland, a very basic thing like geography can have life altering impacts on health outcomes. While the select health outcomes presented here are not necessarily directly linked to housing units, there are evident geographic disparities that may be further exacerbated by housing conditions in specific neighborhoods.

Trailblazing research by the Alameda County Public Health Department has shown that geography—specifically, the neighborhood in which you live—can be a leading cause of certain detrimental health outcomes. The Department's *Life and Death from Unnatural Causes* report utilized data to demonstrate the unique power of place through the disparate experiences of two prototypical Oakland residents:

> Compared with a White child in the Oakland Hills, an African-American born in West Oakland is 1.5 times more likely to be born premature or low-birth weight, 7 times more likely to be born into poverty, 2 times more likely to live in a home that is rented. [...] As a toddler, this child is 2.5 times more likely to be behind in vaccinations. By fourth grade, this child is 4 times less likely to read at grade level. [...] As an adult, he will be 5 times more likely to be hospitalized for diabetes, 2 times as likely to be hospitalized for and to die of heart disease. [...] Born in West Oakland, this person can expect to die almost 15 years earlier than a White person born in the Oakland Hills.[2]

In Oakland, place-influenced health outcomes are not evenly distributed among the population, just as the diverse Oakland population is not evenly distributed across the city. As the *Life and Death from Unnatural Causes* report demonstrates, geography can conceal profound disparities along racial, ethnic, and socio-economic lines that produce disturbing health outcomes. In this section, several specific health outcomes that have a close relation to the built environment are examined, which allow for further comparison to other indicators in the report.

Health data can be confusing. They are derived from many different sources, cover varying time periods, and tend to have errors for which are nearly impossible to control. The section focuses on rates of certain health conditions and events. A rate is a useful way of putting a certain condition in context—a measure of the frequency of an indicator among the population in question. For instance, within a specific zip code, there may be 68 cases of childhood hospitalization for asthma. In order to understand if this is more significant than a neighboring zip code with 89 cases, the rates within each zip code must be calculated and compared. The analysis in this section is based on data of age-adjusted rates provided by the Alameda County Public Health Department from 2009-2011. Age-adjusted rates are based on the number of incidences among the population of each zip code, and adjusted for the relevant subpopulation in question (i.e., children or adults).

In general, age-adjusted rates of health outcomes are not perfect measures because they are derived from incident counts over a specific time period, and use a static measure of population to produce a rate. Further, it is important to understand that most health data include not just the estimated rate of incidences, but also a range of possible values, expressed through an upper and lower confidence interval. If two zip codes have very different rates, but the confidence intervals overlap, there may not be a statistically significant difference between the two geographies. For this reason, it is important to be mindful of both the calculated rates and the confidence intervals when comparing one or more geographies.

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[2] See Alameda County Public Health Department, *Life and Death from Unnatural Causes: Health and Social Inequity in Alameda County*, August 2008.

Asthma

Asthma inpatient hospitalizations are serious incidents that arise when a patient suffers from a chronic attack and experiences severe difficulty in breathing. Asthma in children and adults can be a result of factors such as allergies, environmental pollutants, genetic disposition, as well as household factors such as mold and dust mites. Across Oakland, the rates of emergency room (ER) hospitalization for asthma vary dramatically, with significantly higher rates in the west and east Oakland flatland zip codes (see Map 12). Age-adjusted rates in zip codes 94621 and 94603, for example, are up to ten times higher than those in the Oakland hills zip code of 94618. Compared to the overall Alameda County rate of 139 per 100,000, all but four Oakland zips showed significantly higher rates.

Diabetes

Similar to asthma rates, the hospitalization rates for diabetes in Oakland are far higher in the flatlands, with a particular prominence in East Oakland zip codes (see Map 13). The highest rate is 2,167 inpatient hospitalizations per 100,000 people in zip code 94621. Compared to the hills zip code of 94618 (380 per 100,000 people), the hospitalization rate for diabetes in East Oakland is nearly six times that of the Oakland hills. Most of Oakland zip codes also surpass the countywide rate of 974 hospitalizations per 100,000 people.

While diabetes is not directly connected to housing quality, it can have strong associations with poverty, inadequate nutrition, and diet. Further, the arrangement of the built environment and perceptions of public safety can play intervening roles by either encouraging or dissuading physical activity.

Obesity

The rates of hospitalization due to obesity show a similar distribution across the city to that of both diabetes and asthma, with higher rates in deep East and most of West Oakland (see Map 14). Obesity presents a variety of rates that are up to five times higher in flatlands zip codes compared to the Oakland hills. The countywide rate is 335 hospitalizations for obesity per 100,000 people – a rate that is lower than nine out of Oakland's 14 zip codes.

Like diabetes, while not necessarily connected to interior housing conditions, we know that obesity risk and prevalence is closely related to the built environment. Issues such as perceived neighborhood safety, traffic hazards, walkability, and a lack of access to fresh and healthy foods can contribute to the prevalence of obesity.

Map 12: Age-Adjusted Inpatient Hospitalization Rate for Asthma by Zip Code, 2009-2011

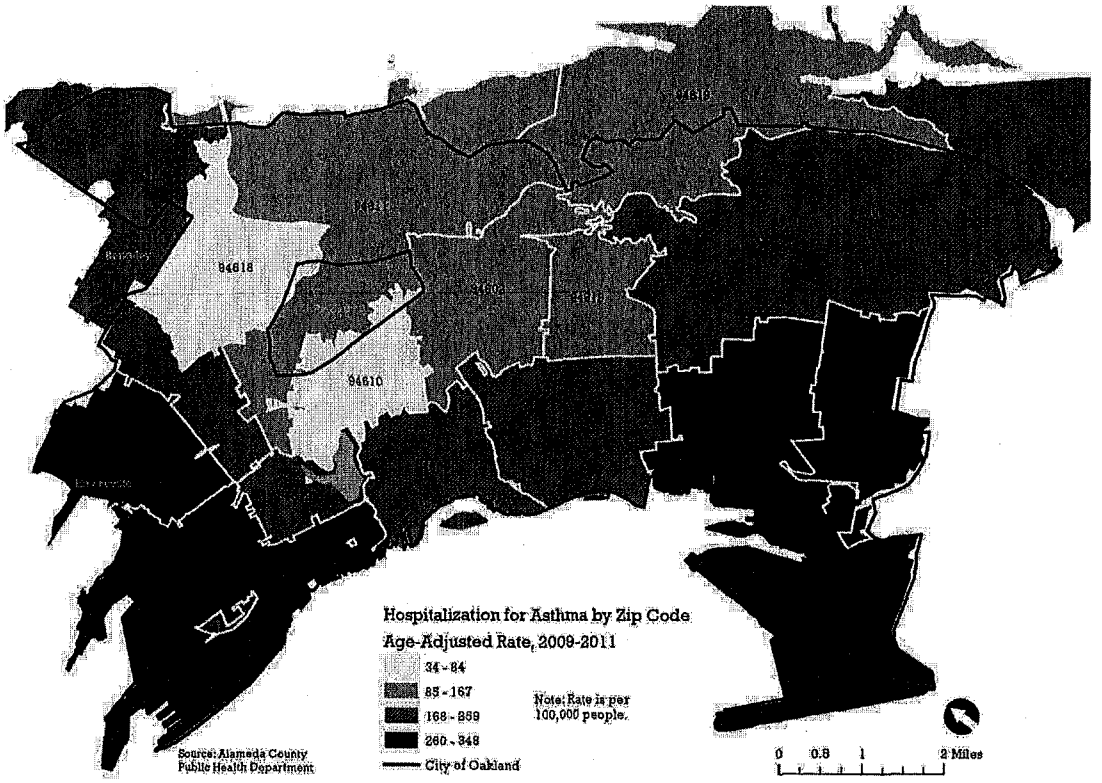
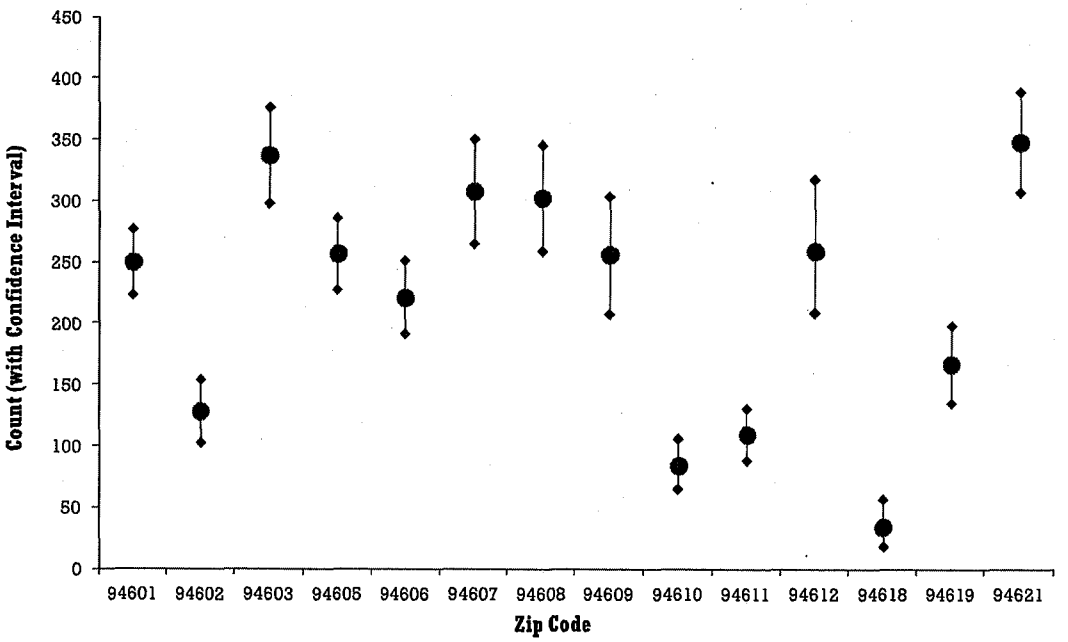


Figure 1: Confidence Intervals for Age-Adjusted Asthma Hospitalization Rates by Zip Code, 2009-2011



Map 13: Age-Adjusted Inpatient Hospitalization Rate for Diabetes by Zip Code, 2009-2011

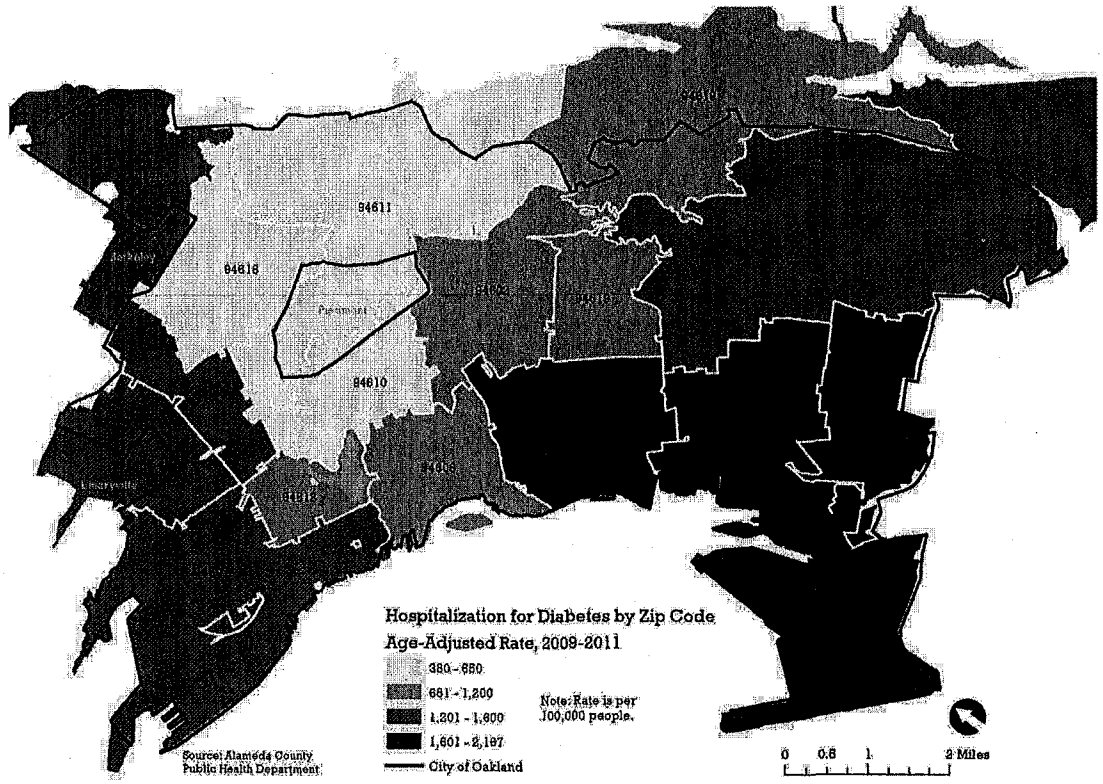
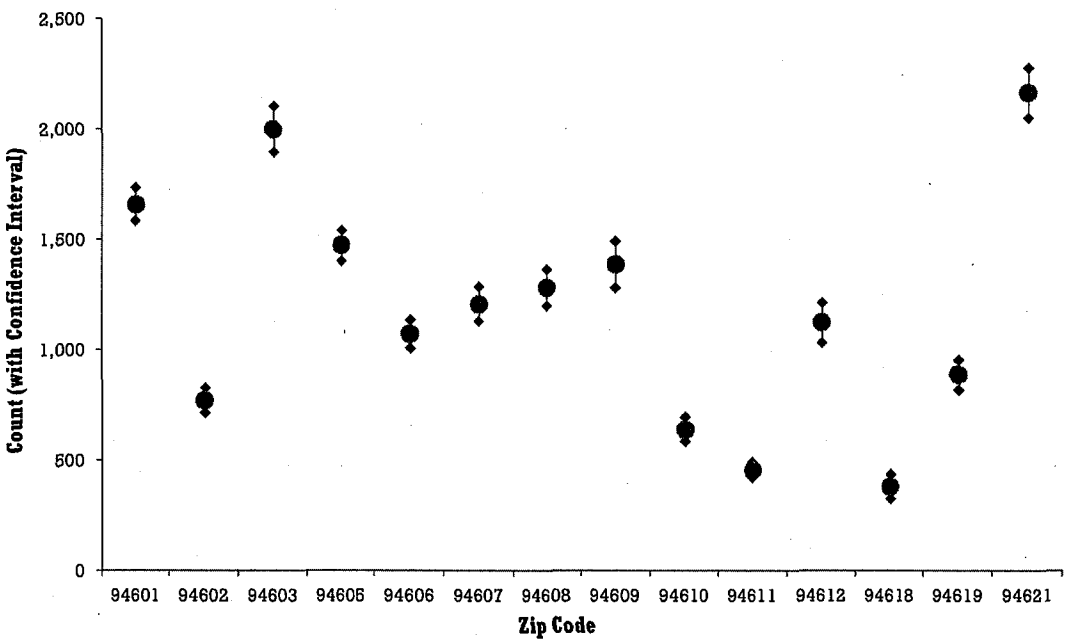


Figure 2: Confidence Intervals for Age-Adjusted Diabetes Hospitalization Rates by Zip Code, 2009-11



Map 14: Age-Adjusted Inpatient Hospitalization Rate for Obesity by Zip Code, 2009-2011

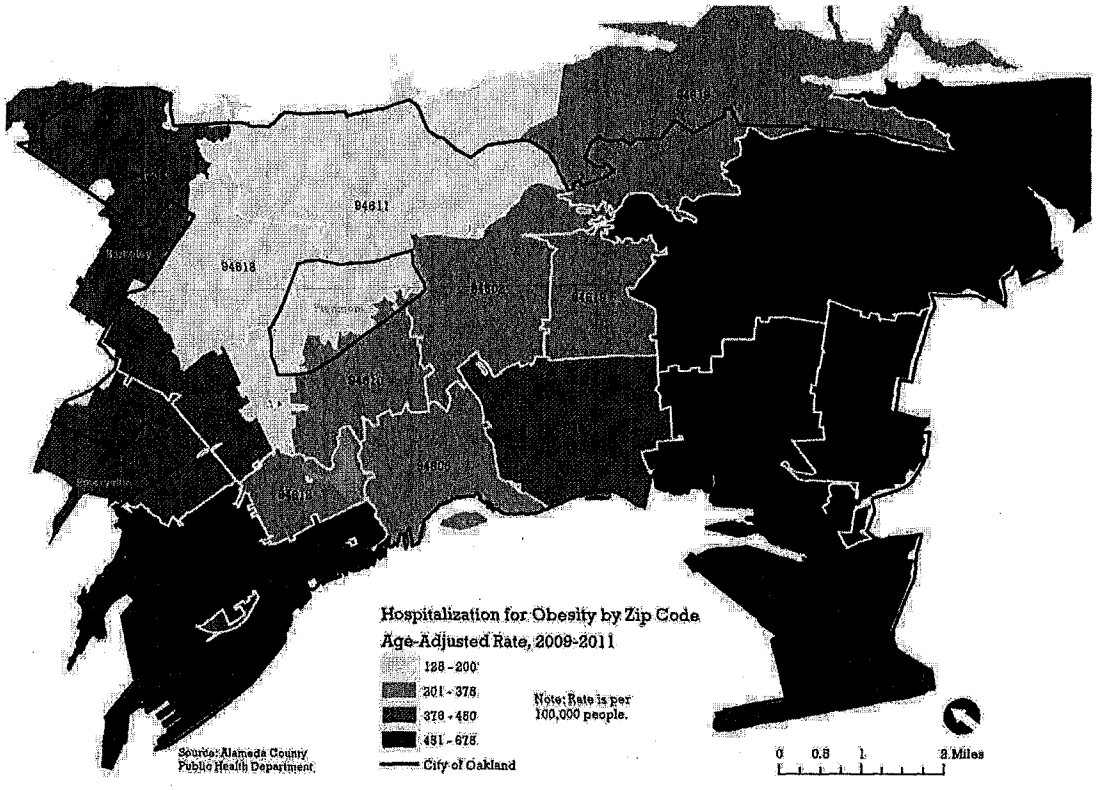
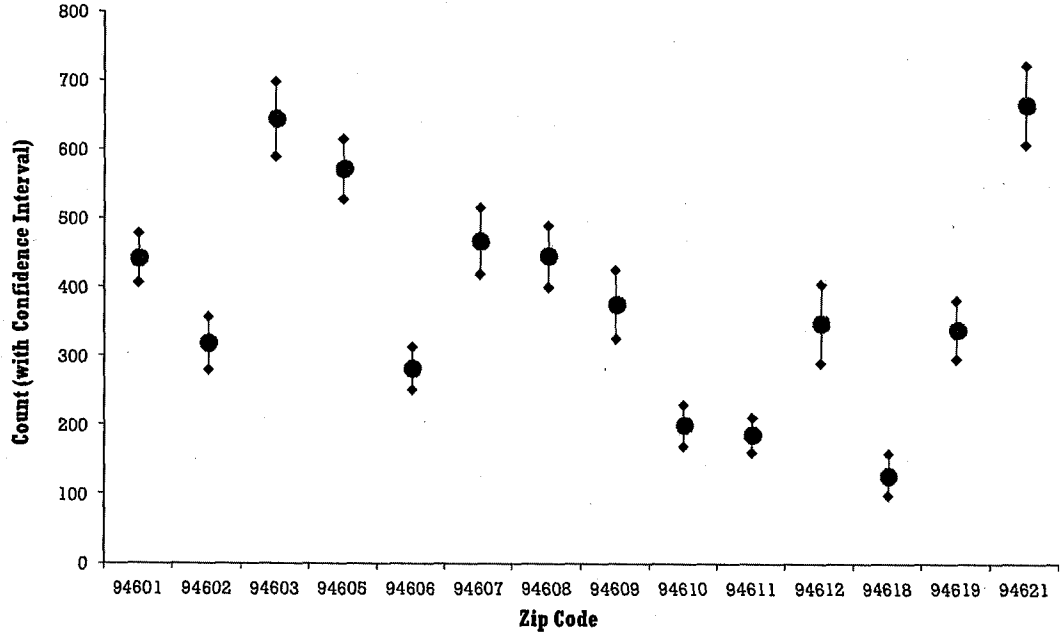


Figure 3: Confidence Intervals for Age-Adjusted Obesity Hospitalization Rates by Zip Code, 2009-11



Housing Units

With some context related to the people and communities that comprise the City, this section begins to explore metrics that provide some baseline information specific to the housing stock within Oakland. With this shift from information about the racial, ethnic, and economic diversity of residents towards more housing related data, new questions begin to emerge about how the built environment and geography may directly impact health. This section explores several key baseline metrics that are useful for understanding the diversity and quality of Oakland's housing stock.

Age of Oakland's Housing Stock

Likely the most important contextual measure for evaluating the health of Oakland's housing stock is its age. In general, housing in Oakland is old. The implications for health are numerous, from potential deferred maintenance and outdated building systems to structural deficiencies, seismic concerns, lead based paint, asbestos, and other hazards. Older homes are also generally less energy-efficient than newer construction – a fact that often means increased costs for residents. Similarly, older homes typically cost more to maintain.

Map 15 shows the percentage of the housing stock in each Oakland Census tract that was built prior to 1979. According to the 2000 U.S. Census, 141,418 of the housing units in Oakland were built prior to 1979; overall, this equates to approximately 90 percent of all housing units.[3] Likewise, in over two-thirds of all Census tracts in the City, at least 90 percent of the housing stock was constructed prior to 1979.

The year 1979 is used as a benchmark for two primary reasons: one, the 2000 U.S. Census data is grouped into decades, with 1979 being the natural end point in the data for the 1970s; and two, lead paint was banned for use in residential properties by the U.S. Consumer Product Safety Commission in 1977. Homes constructed prior to 1978 may contain lead based paint; these homes present a unique set of health related concerns for both residents and workers that might disturb lead based paint during the course of rehabilitation or construction. While the break in the data at the year 1979 does not directly correspond to the ban of lead paint, the break is close enough to approximate the scale of the potential lead problem in Oakland's housing stock.

Figure 4 utilizes the same data displayed in Map 15, however they are broken into four specific groupings to provide a more detailed picture of the various eras in which Oakland's housing stock was constructed. Overall, more than one-third of Oakland's housing was built prior to 1940. As of 2000, only 9.6 percent of Oakland's housing had been constructed after 1979.

[3] Data from the 2000 U.S. Census is used here because it was the last time the decennial Census measured age of housing stock. The main limitation in using this data is that housing units built after 2000 are not represented.

Map 15: Percent of Housing Stock Built Prior to 1979 (by Census Tract)

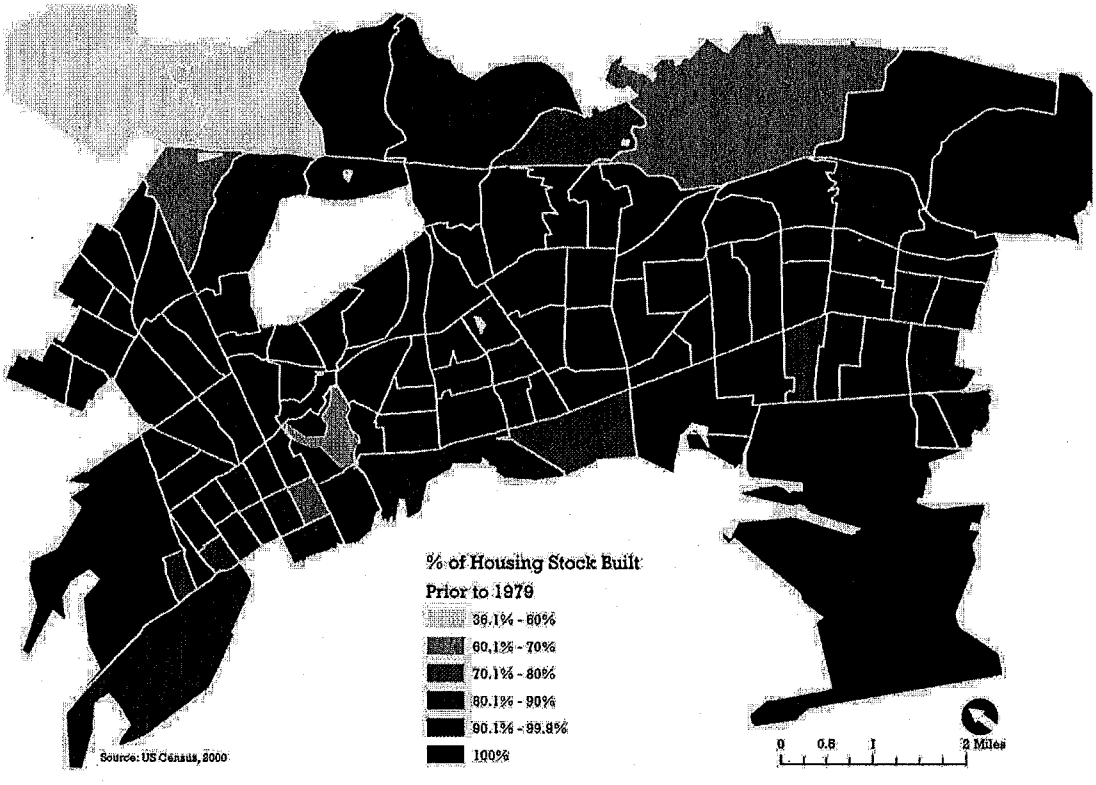
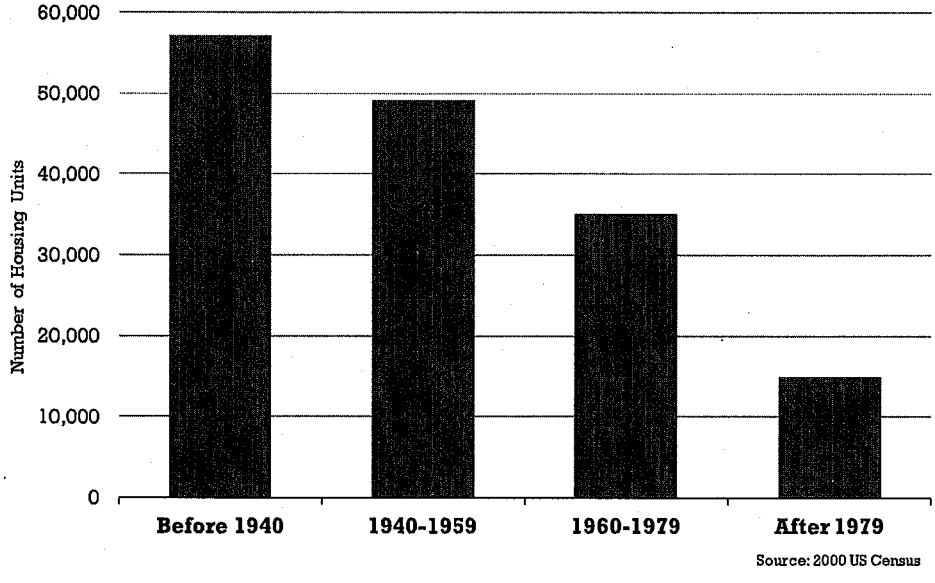


Figure 4: Oakland Housing Units by Year Structure Built



Source: 2000 US Census

Housing Density

Housing density refers to a ratio of housing units or residential types contained within a given geographic area, commonly reported as a number of properties per square mile or dwelling units per acre. As shown in Map 10, population density in Oakland varies considerably by geography. It logically follows that the density of housing types—particularly, single-family versus multi-family— is closely correlated with population density. Quite simply, more people tend to be concentrated in multi-family properties compared to single-family homes. With respect to healthy housing related issues, housing density is a basic contextual measure, providing an overview of where housing units or types of residential properties are concentrated in a city.

We have utilized data from the Alameda County Assessor to analyze the residential housing types within Oakland. The Assessor's data contains a land use code field for each parcel in the county (i.e., "Single-Family Residential" or "Double or duplex type – two units"). These varieties of residential types have been aggregated to the Census tract level for further analysis.

The partition in this section between single-family homes and multi-family properties does not necessarily imply anything about tenure or occupancy within those properties. For instance, the single-family homes represented in this section could be renter-occupied. Housing density simply refers to the concentration of single-family homes and multi-family properties within a given geography. Issues related to housing tenure will be addressed in the following section.

Single Family Housing

According to data from the Alameda County Assessor, there were nearly 66,000 parcels with single-family homes in Oakland as of 2013.

Map 16 displays the density of single-family homes per square mile by Census tract in Oakland. Overall, the highest concentrations of single-family homes are among Census tracts in the flatland neighborhoods east of the San Antonio to the San Leandro border, as well as North Oakland, Piedmont, and lower hills above the Dimond and Laurel districts.

Some of the lowest concentrations of single-family homes in the city are in parts of West Oakland and along the waterfront from Jack London Square through the Estuary and Jingletown neighborhoods. All of these areas are mixed use in nature, with high concentrations of industrial and warehouse uses; this variety of land use types has likely resulted in a lower density of single-family homes. Likewise, there are relatively lower concentrations of single-family homes in areas among the Oakland hills that are typically considered exclusively single-family in nature. The fact remains that those neighborhoods are exclusively single-family—the homes are simply more spread out and are typically on larger lots, resulting in a lower density.

It is also notable that many of the neighborhoods with the highest concentration of single-family homes are also the same areas that were hardest hit by the foreclosure crisis – specifically, the Census tracts in East Oakland around Havenscourt, Eastmont, Castlemont, Brookfield Village, and Sobrante Park. In the wake of the crisis, many of those single-family homes that were lost to families through foreclosure have been subsequently acquired by investors and speculators.

Previous research by Urban Strategies Council has shown that post-foreclosure speculators may not be making substantial or necessary improvements to their properties; instead, many speculators are simply completing cosmetic improvements in order to rent their properties.[4] Given the age of the housing stock throughout East Oakland, it is reasonable to assume that there are condition-related problems within previously foreclosed homes that are not being sufficiently addressed. Accordingly, the recent growth of the post-foreclosure REO-to-rental market may be incubating health issues among a new group of renters within single-family homes.

Multi-Family Properties

The Alameda County Assessor's data indicates that there are over 14,800 multi-family properties throughout Oakland; these properties range from two-unit duplexes to large apartment buildings. However, the overwhelming majority of multi-unit residential properties have two to four units, accounting for 12,056 of the total multi-unit count.

Map 17 shows the density of multi-family properties per square mile by Census tract in Oakland. Overall, multi-family properties are almost exclusively concentrated in the flatland neighborhoods of Oakland, with the highest densities around Adams Point and Lake Merritt extending east through Eastlake, the San Antonio, and the Fruitvale. There are additional high concentrations of multi-family properties in portions of West Oakland and the flatland areas of North Oakland.

Those areas in deep East Oakland shown in Map 16 where there is a high density of single-family homes have relatively low concentrations of multi-family properties; this fact belies the common perception that East Oakland is home to the highest concentration of multi-family properties in the city.

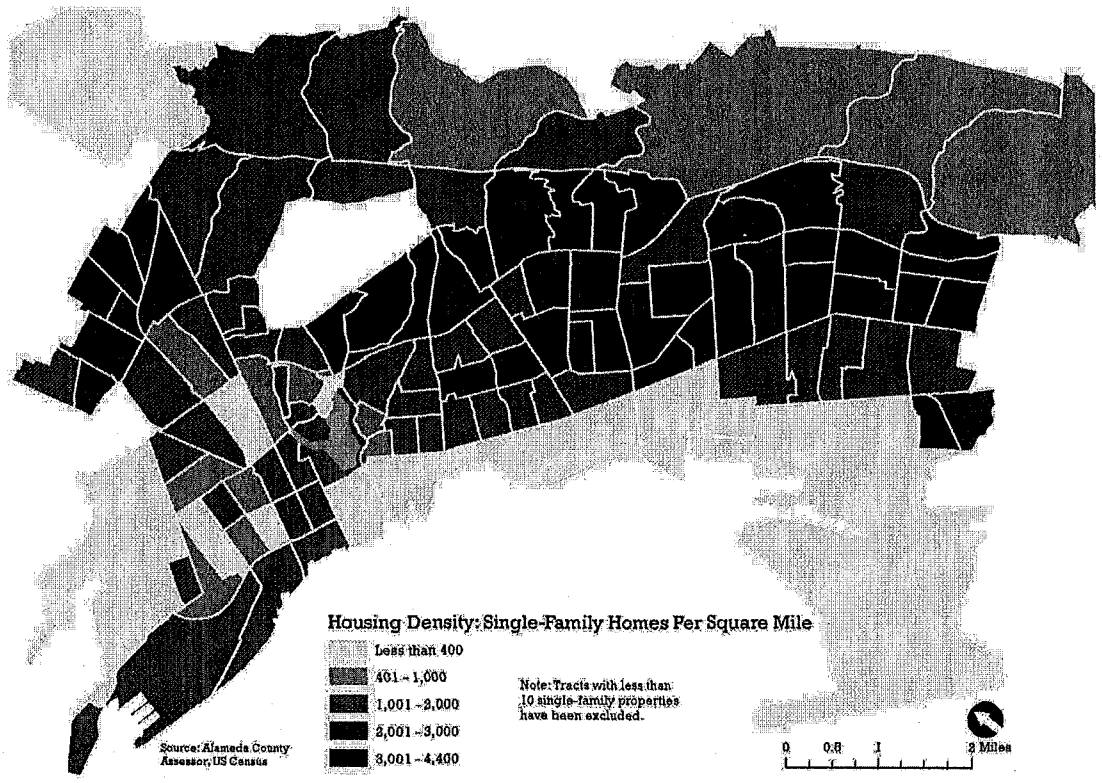
As might be expected, the geography of multi-family housing density very closely mirrors overall population density. However, as mentioned above, the interplay between population density and residential density also necessarily involves the intervening issue of household size. An area with a high population density could simply be the result of many housing units within a given geography. Depending on the nature of family composition and household sizes, an area with a high population density could also conceal an issue such as overcrowding.

Residential Types by Neighborhood

While density provides a relative measure of concentration of housing types within a given geography, it can also be useful to consider raw counts of housing types within those same areas. Density alone may not reveal the level of detail desired for targeted outreach efforts, or other planning uses. For instance, while Table 1 shows that the Montclair Census tract has the most single-family homes in Oakland, the single-family housing density in Montclair is relatively low. Similarly, the Longfellow neighborhood has the most multi-unit properties, yet does not rank in the highest tier with respect to multi-family property housing density. Table 1 below shows a ranking of the top 25 neighborhoods in Oakland by various housing types.

[4] See Urban Strategies Council, *Who Owns Your Neighborhood: The Role of Investors in Post-Foreclosure Oakland*, June 2012. (http://www.infoalamedacounty.org/index.php/research/housing/genhousing/oaklandinvestors.html).

Map 16: Density of Single-Family Homes Per Square Mile (by Census Tract)



Map 17: Density of Multi-Family Housing Properties Per Square Mile (by Census Tract)

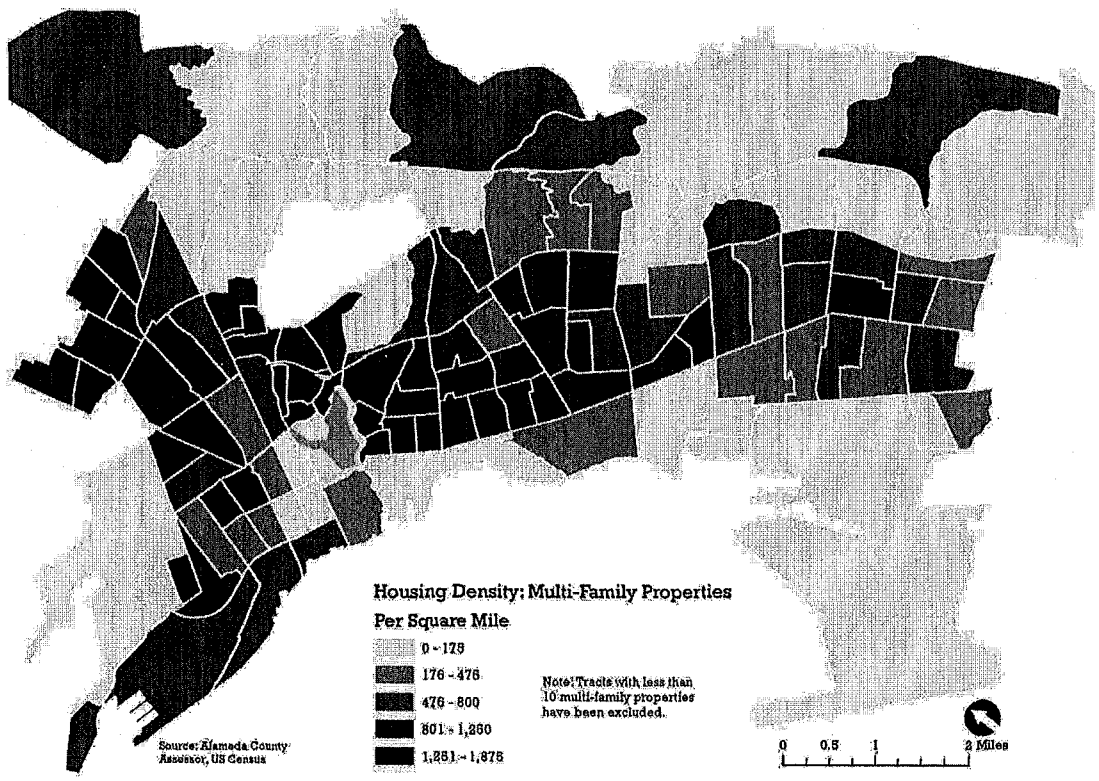


Table 1: Top 25 Oakland Neighborhoods with the Most Properties by Residential Type

	Neighborhood/Census Tract	Single Family Homes
1	Montclair: 4045.02	2,246
2	Glen Highlands: 4044	1,823
3	Piedmont Pines: 4046	1,761
4	Lincoln Highlands: 4067	1,669
5	Crocker Highland: 4051	1,618
6	Caballo Hills: 4081	1,606
7	Maxwell Park: 4077	1,564
8	Eastmont Hills: 4083	1,442
9	Bancroft/Havenscourt: 4087	1,416
10	Bancroft/Havenscourt: 4086	1,208
11	Upper Rockridge: 4043	1,153
12	Sequoyah: 4099	1,142
13	Fairfax/Lower Maxwell Park: 4076	1,130
14	Shafter/Rockridge: 4003	1,118
15	Upper Piedmont Avenue: 4042	1,118
16	Glenview: 4049	1,118
17	Chabot Park: 4100	1,112
18	Redwood Heights: 4068	1,094
19	Arroyo Viejo: 4085	1,038
20	Lower Laurel/Allendale: 4070	981
21	Panoramic Hill: 4001	979
22	Redwood Heights: 4079	948
23	Millsmont: 4082	938
24	Durant Manor: 4104	935
25	Golf Links: 4098	923

	Neighborhood/Census Tract	2-4 Unit Properties
1	Longfellow: 4010	348
2	Hoover/Foster: 4014	309
3	Santa Fe/N. Oakland: 4007	299
4	Temescal: 4011	262
5	Shafter/Rockridge: 4003	234
6	Fairfax/Lower Maxwell Park: 4076	232
7	North Stonehurst: 4093	227
8	Lower Laurel/Allendale: 4070	226
9	Peralta/ Hacienda: 4065	224
10	San Antonio/Highland Terrace: 4058	216
11	Prescott/Mandela/Peralta: 4022	212
12	Gaskill: 4009	209
13	Laurel/Upper Peralta Creek: 4066.01	204
14	Upper Telegraph/Fairview Park: 4004	203
15	Cleveland Heights: 4052	202
16	Webster: 4096	198
17	Paradise Park/Golden Gate: 4008	193
18	Bancroft/Havenscourt: 4087	193
19	Bushrod/N. Oakland: 4005	190
20	Glenview: 4049	183
21	Ivy Hill: 4055	181
22	Bella Vista: 4056	178
23	Lakeshore: 4038	176
24	Millsmont: 4082	175
25	Fruitvale: 4072	172

	Neighborhood/Census Tract	5+ Unit Properties
1	Cleveland Heights: 4052	112
2	Adams Point: 4036	106
3	Cleveland Heights: 4053.01	87
4	Eastlake/Clinton: 4054.01	81
5	Adams Point: 4037.01	71
6	Lakeshore: 4038	70
7	Ivy Hill: 4055	70
8	Temescal: 4011	65
9	Oakland Ave/Harrison St: 4035.01	65
10	Bella Vista: 4056	62
11	Fruitvale: 4072	62
12	Piedmont Avenue: 4040	56
13	Eastlake: 4053.02	56
14	Peralta/ Hacienda: 4065	56
15	Grand Lake: 4039	55
16	Fruitvale/Hawthorne: 4062.02	54
17	Lake Merritt: 4034	49
18	Hoover/Foster: 4014	48
19	Adams Point: 4037.02	48
20	Pill Hill: 4013	43
21	Laurel/Upper Peralta Creek: 4066.01	42
22	Longfellow: 4010	40
23	Oakland Ave/Harrison St: 4035.02	40
24	Reservoir Hill/ Meadow Brook: 4062.01	40
25	Eastlake/Clinton: 4054.02	39

	Neighborhood/Census Tract	All Multi-Family Properties
1	Longfellow: 4010	388
2	Hoover/Foster: 4014	357
3	Temescal: 4011	327
4	Santa Fe/N. Oakland: 4007	324
5	Cleveland Heights: 4052	314
6	Peralta/ Hacienda: 4065	280
7	Shafter/Rockridge: 4003	272
8	Fairfax/Lower Maxwell Park: 4076	267
9	Lower Laurel/Allendale: 4070	258
10	Ivy Hill: 4055	251
11	Lakeshore: 4038	246
12	Laurel/Upper Peralta Creek: 4066.01	246
13	Bella Vista: 4056	240
14	North Stonehurst: 4093	239
15	San Antonio/Highland Terrace: 4058	238
16	Upper Telegraph/Fairview Park: 4004	234
17	Fruitvale: 4072	234
18	Paradise Park/Golden Gate: 4008	228
19	Bancroft/Havenscourt: 4087	226
20	Bushrod/N. Oakland: 4005	221
21	Gaskill: 4009	219
22	Prescott/Mandela/Peralta: 4022	218
23	Eastlake/Clinton: 4054.01	218
24	Webster: 4096	208
25	Glenview: 4049	199

Source: Alameda County Assessor; U.S. Census

Housing Tenure

The term *housing tenure* refers to the status of occupancy within a housing unit, most commonly split between owner-occupancy and renter-occupancy. Overall, Oakland is a majority renter city. The total composition of owners and renters in the city has changed very little since 2000: in both the 2000 and 2010 Census, renters made up 59 percent of the households in the city, while owners represented 41 percent of the city's households. It is also worth noting that the recent growth in post-foreclosure conversions of previously owner-occupied single-family homes to rental units is likely not fully captured in the 2010 data; as such, there are potentially as many as several thousand units that have shifted from owner to renter occupancy in recent years. Further, this may only be a temporary phenomenon until the market fully reengages and investors begin to sell off their distressed property portfolios.

While Oakland is indeed a majority renter city, it is overwhelmingly renter-occupied in some areas, and overwhelmingly owner-occupied in very different areas. The static citywide measure of housing tenure minimizes this geographic disparity. Given the age of the housing stock throughout Oakland and the diminished capacity and agency of renters to effectively improve the structures they inhabit, healthy housing concerns among those who rent are likely concentrated in very specific parts of the city.

Owner-Occupancy

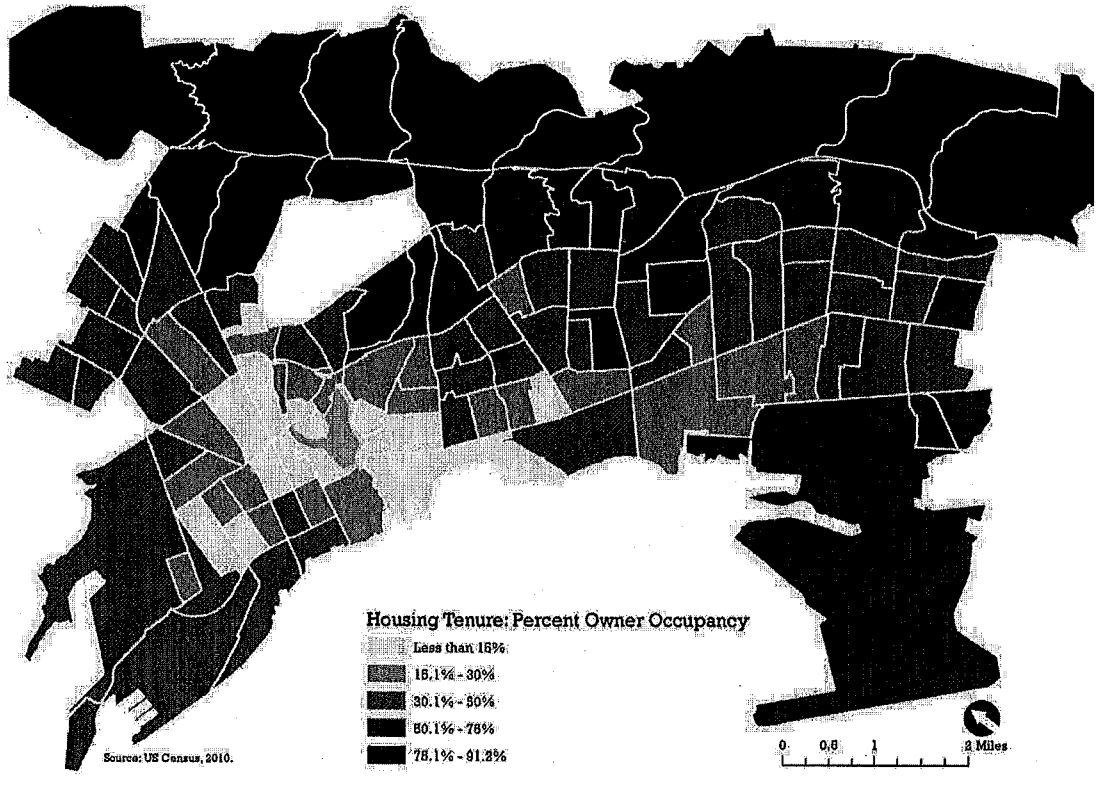
Map 18 below displays the relative share of owner-occupied households by Census tract throughout Oakland. There is a very distinct pattern: tracts with the highest percent of homeownership (over 75%) are all in the Oakland hills. A narrow band of tracts in the lower hills from Lincoln Highlands east to Golf Links and Toler Heights also displays high rates of owner-occupancy. Sobrante Park, Brookfield Village, and Maxwell Park are among the very few tracts in the flatlands that have a majority of households that are owner-occupied. In the East Oakland tracts with some of the highest concentrations of single-family homes in the city (see Map 16), less than half of the households are owner-occupants.

Renter-Occupancy

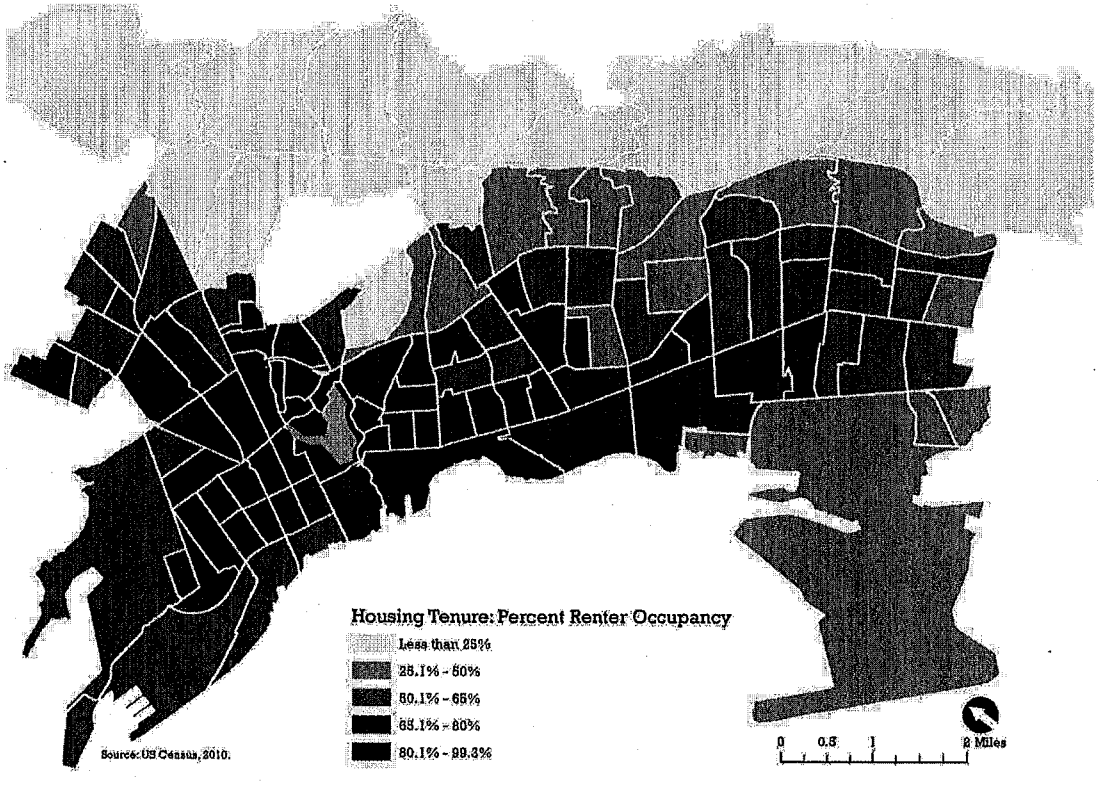
Map 19 displays Census tracts according to their relative percentage of renter occupied households, and naturally is, in many respects, the inverse of owner-occupancy in Map 18. There is a very distinct and uniform distribution of renter occupancy in the Oakland flatlands that radiates out from downtown and the neighborhoods around Lake Merritt. The tracts of West Oakland, Pill Hill, Adams Point, and Eastlake are all comprised of at least 80 percent renter occupied households. Surrounding these overwhelmingly renter tracts is a tier of neighborhoods that are at least two-thirds renter occupied, including Prescott and Hoover/Foster in West Oakland, Cleveland Heights and Bella Vista near Lake Merritt, and the tracts extending east through the San Antonio, Fruitvale, and Havenscourt/Coliseum areas. Less than 25 percent of the households in Trestle Glen, Upper Rockridge, and all of the tracts in the Oakland hills are renter-occupied.

Map 20 offers another way of displaying the prominent geographic patterns of housing tenure in Oakland, highlighting specifically those tracts that have either *two-thirds* owner or renter occupancy. The spatial polarity in housing tenure between the hills and flatlands is stark, showing a nearly uniform buffer separating the two-thirds majority renter and owner parts of Oakland.

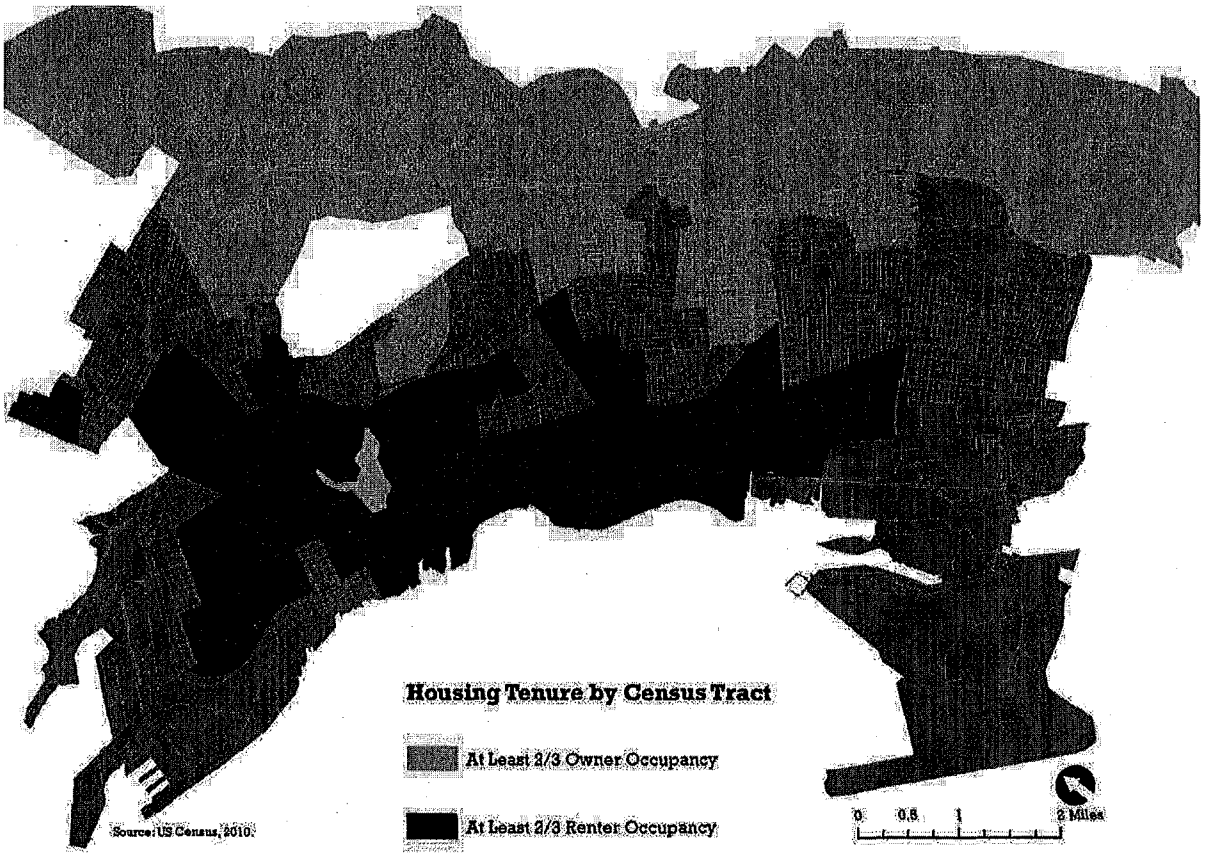
Map 18: Percent Owner-Occupancy by Census Tract, 2010



Map 19: Percent Renter-Occupancy by Census Tract, 2010



Map 20: Tracts with at Least Two-Thirds Owner or Renter Occupancy



Potentially Vulnerable Renter Populations

As previously mentioned, renter households have less agency and incentive than owner-occupied households to improve the condition of their homes. If a roof is leaking or a heater does not work, it is the responsibility of the owner rather than the tenant to fix the problem. While proper maintenance may be a legal obligation of an owner, renters are still at the mercy of someone else to address issues that may have direct impacts on their health. Further, some renters may be more susceptible to health problems that are exacerbated or created by conditions within the home. In particular, children and the elderly are often considered more vulnerable to poor conditions within the home, whether it is a lead paint hazard that is highly toxic for developing children, or an improperly constructed staircase that may present a fall hazard for a senior tenant.

Using data from the 2010 U.S. Census, we have taken a closer look at two subpopulations of renter households, specifically those renter-occupied units where the householder is over the age of 65, and renter-occupied units with children.

Renter Households where Householder is Over Age 65

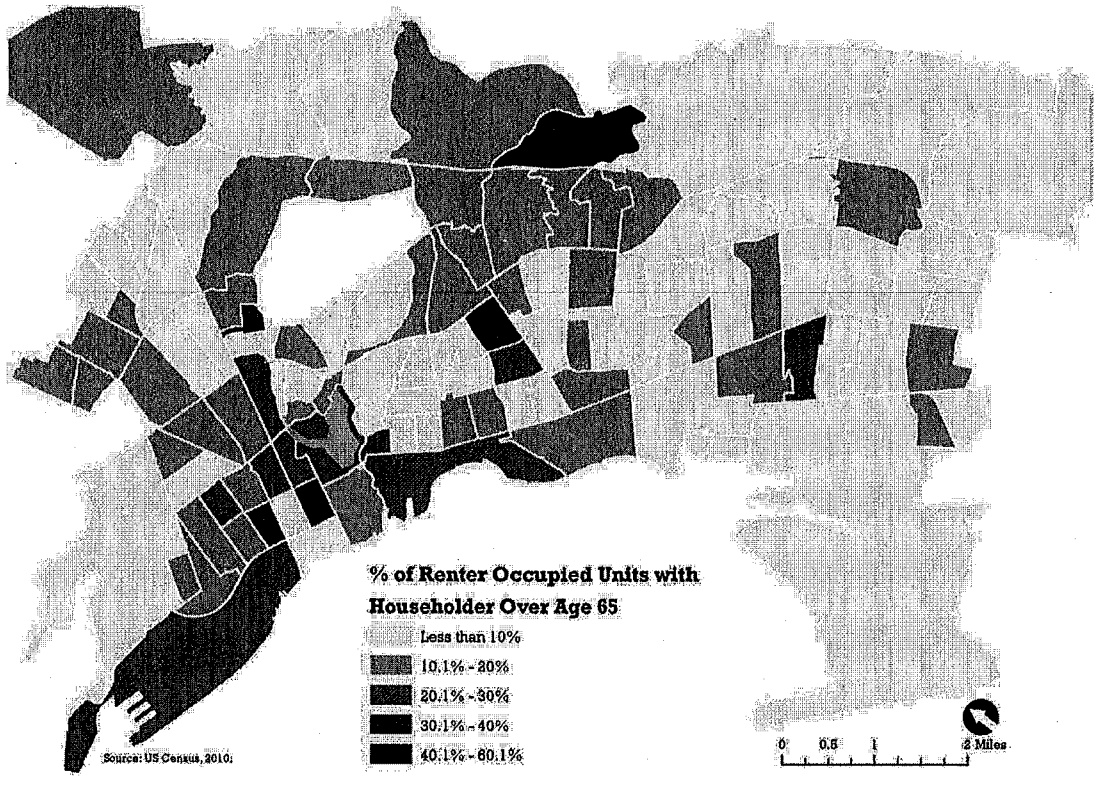
Map 21 shows Census tracts throughout Oakland by the percentage of renter occupied units where the householder is over the age of 65. In contrast to many of the other maps in this report, there is no clear geographic pattern to the location of seniors who are renters. The presence of this subset of renters within certain Oakland geographies is likely most influenced by the location of specific senior housing developments. The highest percentages of renter units with an elderly householder are in Chinatown and the Westminster neighborhood in the Oakland hills. To a lesser extent, senior renters comprise as much as 30 percent of renter households in the tracts around downtown, Lake Merritt, and Pill Hill.

Renter Households with Children

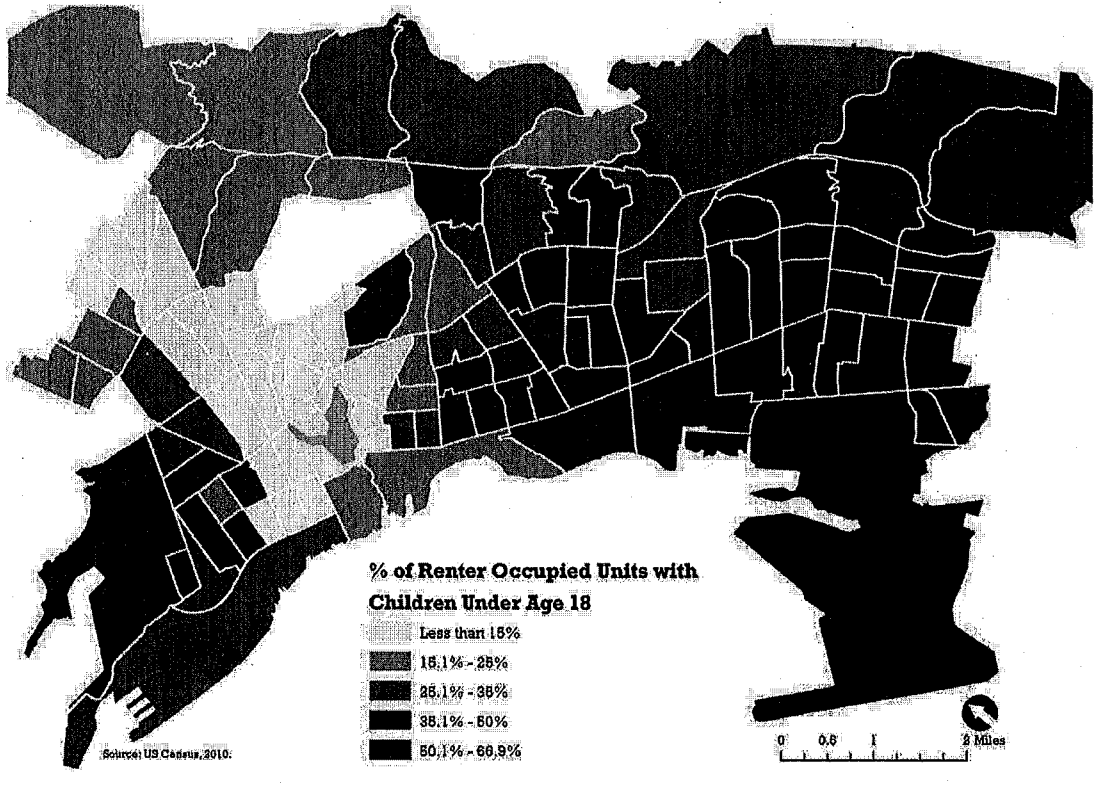
Compared to the elderly renter population, a very evident pattern emerges in Map 22 showing the percentage of renter occupied units with children by Census tract. There is a great absence of renter households with children around downtown, Lake Merritt, and through Temescal and North Oakland. This is likely an artifact of a growing population of younger households in these areas, as well as a moderate senior renter population.

In contrast, the flatland tracts in West Oakland and all of East Oakland have very notable concentrations of renters with children. Throughout the East Oakland flatlands from the San Antonio to the San Leandro border, one-third of all renter households have children. In 20 of these tracts, over half of the renter-occupied units are households with children. Considering this in relation to the socio-economic and health indicators addressed previously, these are the largely the same neighborhoods with high enrollment in CalWORKs, CalFresh, and Medi-Cal, in addition to being coincident with the zip codes with the poorest health outcomes. Further, these are also Oakland's predominate communities of color.

Map 21: Percent of Renter Occupied Units Where Householder is Over Age 65



Map 22: Percent of Renter Households with Children Under Age 18



Housing Affordability

A common theme among the research examining the connection between housing and health is *housing affordability*. The cost of housing is usually the most significant ongoing expense for people. Housing costs have the ability to greatly affect the availability of disposable income for other necessities. If a family must stretch their income to afford rent or their mortgage, they may likely make trade-offs that ultimately impact their health. Research has repeatedly shown that a lack of affordable housing can be linked to a diminished capacity to pay for childcare, health insurance, fresh and healthy food, and inadequate nutrition in children. These negative consequences can have a snowball effect on one's health, contributing to increased hypertension and stress, and overall instability in the home.

Housing affordability can be measured and reported in a variety of ways. Typically, affordability indicators involve a comparison of housing costs to incomes or wages in a given area. Unfortunately, the neighborhood level measures currently reported through the American Community Survey are unreliable due to high margins of error. However, citywide and metro-level data can still be quite telling when coupled with other local data.

In Oakland and throughout the Bay Area, housing affordability is an issue that impacts both homeowners and renters. By various measures, Oakland is one of the least affordable cities in the country. Fair market rents as determined by the U.S. Department of Housing and Urban Development place the Oakland metro area as the 17th least affordable in a field of 206 metro areas.[5] Likewise, Oakland ranked as the 17th least affordable metro area in terms of homeownership, with a median home sales price of $339,000 during the first quarter of 2013.[6]

Another common indicator used to capture the relative affordability among different geographies is a measure referred to as housing cost burden. A cost burdened household is generally one that spends more than a third of their income on housing costs. Severely cost burdened households spend more than half of their income on housing. According to citywide data from the American Community Survey (2007-11 5-Year Estimate), 46 percent of both renters and owners (with a mortgage) in Oakland spend 35 percent or more of their household income for housing. This means that nearly half of all Oakland households are cost burdened with respect to their housing costs.

Figure 5 shows the historical trend of both median home sales prices and incomes in the Oakland metro area. In terms of housing prices, the boom and bust of the recent housing crisis is particularly prominent, where the peak median home price in 2006 reached over $550,000. By the end of 2008, the median home price had fallen to $281,000. After several years of uncertainty, prices have risen sharply to a pre-bust level of $425,000 as of the second quarter in 2013.

Even more troubling in Figure 5 is the trajectory of median incomes. Once again, the housing market has entered a phase where sales prices are rising at a rate that grossly outpaces income growth. If this divergent

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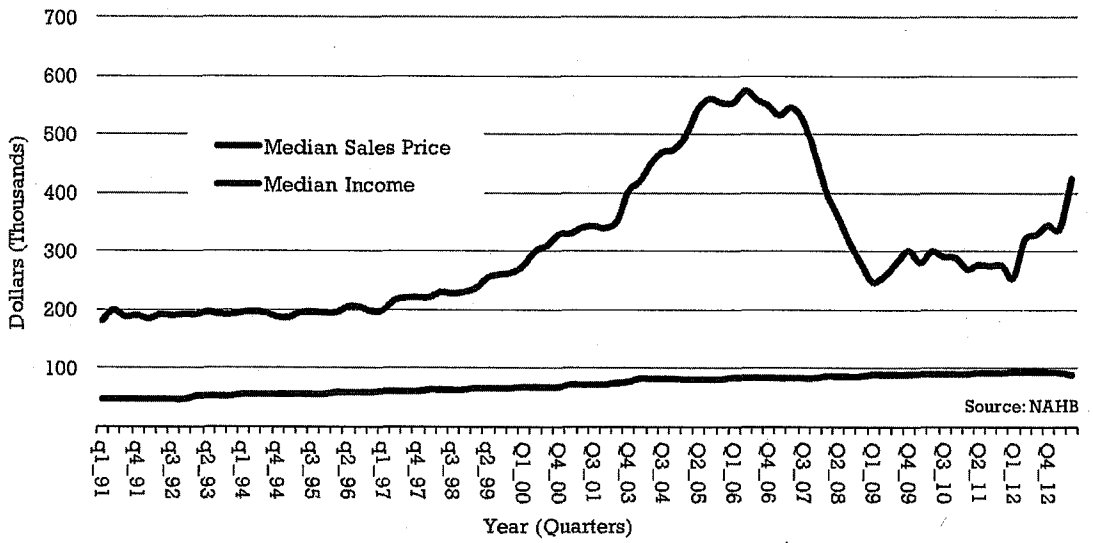
[5] The 2013 fair market rent for a 2-bedroom unit in the Oakland-Fremont-Hayward metro area is $1,361. See the National Housing Conference and Center for Housing Policy's 2013 *Paycheck to Paycheck* report, which ranks metro areas by fair market rents: http://www.nhc.org/media/files/Rankings_Rental_2013.pdf.

[6] The *Paycheck to Paycheck* report also provides rankings based on home sales prices reported by the National Association of Home Builders: http://www.nhc.org/media/files/Rankings_Ownership_2013.pdf.

relation between incomes and home prices continues, housing affordability—or lack thereof—will become an increasingly problematic issue throughout Oakland and the Bay Area.

Figure 5: Median Home Sales Prices versus Median Incomes for Oakland-Fremont-Hayward MSA, 1991-2013Q2



Again, the affordability problem is not limited to homeowners or those wishing to purchase a home in such a high priced market. Utilizing data from the National Low Income Housing Coalition's 2013 *Out of Reach* report, Table 2 reveals the troubling situation for low-income renters in the Oakland metro area. As mentioned above, the Fair Market Rent (FMR) for a two-bedroom apartment is $1,361. To be considered affordable, a family would have to earn at least $54,440 annually to rent a two-bedroom apartment at $1,361.

The scenario gets much worse when considering the implications for someone who earns the minimum wage. Earning the minimum wage of eight dollars per hour, one would have to work 131 hours in a week—the equivalent of 3.27 full time jobs—to be able to afford the two-bedroom apartment at the fair market rent.

The *Out of Reach* data effectively illustrates the types of trade-offs and compromises that individuals and families must make in order to live in the East Bay. For many people—and particularly those on the low end of the wage scale—housing costs in Oakland may very well be a contributor to negative health outcomes.

Table 2: Housing Affordability for Renters in the Oakland-Fremont Metro Area

Fair Market Rent[2] by Unit Size		Income Needed to Afford Fair Market Rent	
Zero bedroom	$892	0 bdrm @ FMR	$35,680
One bedroom	$1,082	1 bdrm @ FMR	$43,280
Two bedroom	$1,361	2 bdrm @ FMR	$54,440
Three bedroom	$1,901	3 bdrm @ FMR	$76,040
Four bedroom	$2,332	4 bdrm @ FMR	$93,280

The Fair Market Rent for a two-bedroom rental unit in the Oakland-Fremont HMFA is $1,361

A renter household needs an annual income of $54,440 in order for a two-bedroom rental unit at the Fair Market Rent to be affordable[3].

Housing Wage (by Unit Size @ FMR)		Housing Wage as % of Minimum Wage (by Unit Size @ FMR)	
Zero bedroom	$17.15	Zero bedroom	214%
One bedroom	$20.81	One bedroom	260%
Two bedroom	$26.17	Two bedroom	327%
Three bedroom	$36.56	Three bedroom	457%
Four bedroom	$44.85	Four bedroom	561%

A renter household needs one full-time job paying $26.17/hour in order for a two-bedroom rental unit at the FMR to be affordable.

In the Oakland-Fremont HMFA, the Housing Wage for a two-bedroom rental unit represents 327% of the minimum wage.

Minimum wage	$8.00
Rent affordable with full-time job paying min wage	$416.00

If one wage-earner holds a job paying the minimum wage, a household can afford to spend as much as $416 in monthly rent.

Work Hours Per Week @ Minimum Wage Needed to Afford:		# of Full Time Jobs @ Minimum Wage Needed to Afford:	
Zero bedroom	86	Zero bedroom	2.14
One bedroom	104	One bedroom	2.60
Two bedroom	131	Two bedroom	3.27
Three bedroom	183	Three bedroom	4.57
Four bedroom	224	Four bedroom	5.61

A renter earning the minimum wage must work 104 hours to afford a two-bedroom rental unit at the Fair Market Rent.

A renter household needs 2.6 full-time jobs paying minimum wage to afford a two-bedroom unit at the Fair Market Rent.

Data: National Low Income Housing Coalition, Out of Reach 2013

1. "HMFA" refers to a HUD Metropolitan Fair Market Rent Area. The Oakland-Fremont HMFA includes Alameda and Contra Costa counties.
2. Fair market rents are gross rent estimates published annually by HUD that include the cost of rent and all utilities except telephone service.
3. "Affordable" rents represent the generally accepted standard of spending not more than 30% of gross income on gross housing costs.

Housing Quality

The most direct impacts housing can have on health outcomes stem from the quality and habitability of one's living environment. The Centers for Disease Control and National Center for Healthy Housing have developed a framework for understanding the types of issues that affect health within homes and avenues for intervention to address such problems. Their framework outlines five categories of intervention: biological agents (toxins) interior to the home, such as mold; chemical agents (toxics) interior to the home, such as lead paint; structural deficiencies; external exposures, such as drinking water or sewage; and community-level housing interventions.[7] These categories also circumscribe the types of issues that would be useful to measure at a local level to better understand the breadth and scope of housing problems. Yet how can we possibly begin to measure the quality of over 150,000 housing units in Oakland?

The lack of individual, record-level data on housing units in Oakland is a major barrier to developing a nuanced understanding of the potential health issues facing residents because of their housing situations. In the absence of a detailed evaluation of every home—or even a large representative cross-sample—in the City, we must compile a range of disparate data to help parse out the conditions and issues most prevalent among Oakland housing.

One key indicator that we have already examined is the age of the housing stock in Oakland (see Map 15). Age is a baseline measure that provides an insight into the types of issues that affect both housing quality and the health of residents inhabiting the housing stock. This section covers other important housing quality indicators, including vacancy, code enforcement issues and building permits. Together, they begin to map out a general picture of habitability and condition, as well as the subpopulations and neighborhoods most impacted by housing-related health issues.

Residential Vacancy

Housing vacancy is a unique problem that has reverberating impacts at many levels. Homes sitting vacant for any extended period of time are often attractors of a range of condition problems, whether they stem from vandalism or outright neglect and a lack of maintenance. Evidence has emerged out of experiences from the foreclosure crisis that homes sitting vacant have an increased prevalence of mold growth due to poor ventilation and a lack of required maintenance. If proper rehabilitation or remediation is not completed prior to occupancy, the habitability of such properties remains problematic.

Aside from the potential housing condition issues—and by extension, resident health issues—that can accrue in long-term vacant units, there are external negative consequences for neighboring residents and local governments.[8] Vacancy has been shown to put significant strains on municipal services through increased crime and vandalism, which in turn presents larger issues for public safety and neighborhood stability. Municipalities may also experience a decline in property tax revenues, which may further impact neighborhood services.

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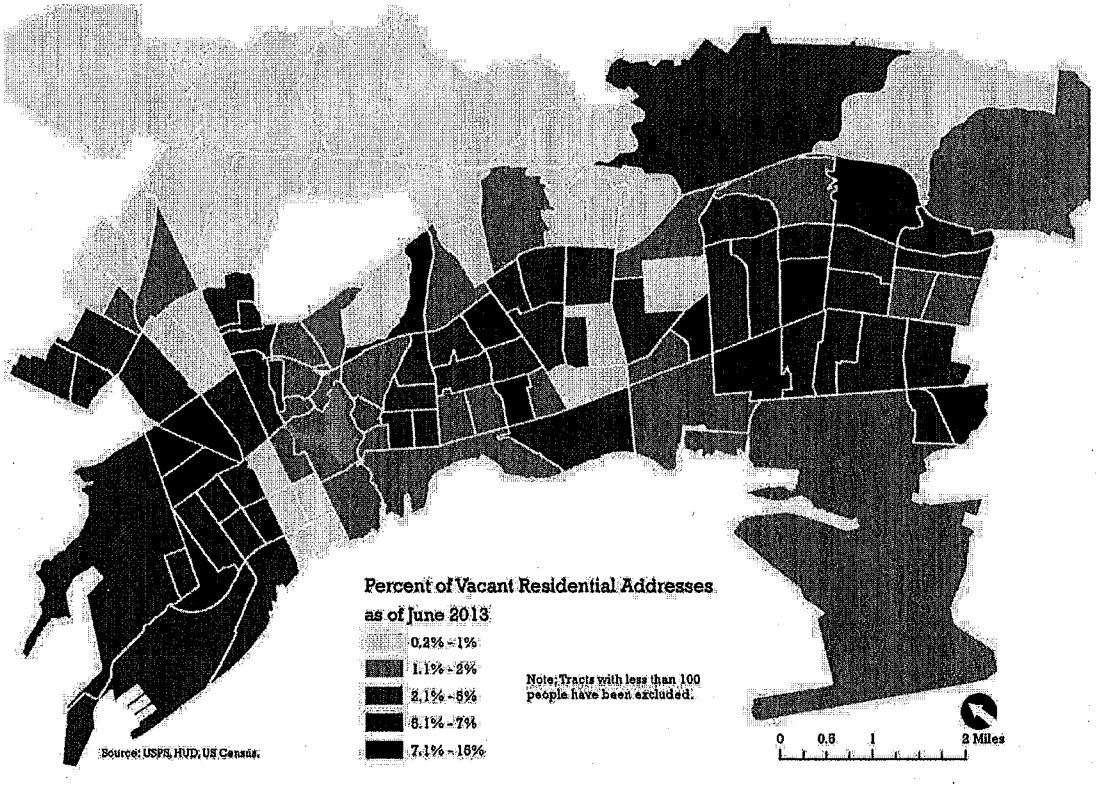
[7] David E. Jacobs and Andrea Baeder, *Housing Interventions and Health: A Review of the Evidence*, National Center for Healthy Housing, 2009.
[8] National Vacant Properties Campaign, *Vacant Properties: The True Costs to Communities*, NVPC: Washington, D.C., August 2005.

Likewise, homeowners living adjacent to abandoned properties may see a decline in property values due to the liabilities associated with vacancy. The spillover effects for neighbors can also extend into issues that impact health due to problems such as rodent infestations, illegal dumping of toxic materials, and a decline in overall public safety.

Using data from the U.S. Postal Service and the U.S. Department of Housing and Urban Development, Map 23 shows percent of vacant residential addresses per Census tract in Oakland as of June 2013. Overall, there were 4,470 vacant residential addresses in Oakland as of June 2013. The areas with the highest concentration of vacant homes are in West Oakland, specifically the McClymonds, Hoover/Foster, and Clawson/Dogtown neighborhoods. In these areas, between 7 and 15 percent of homes were vacant as of June 2013. Other scattered tracts in the flatlands have between 5 to 7 percent residential vacancy, including Sobrante Park, the Lower San Antonio, Havenscourt/Coliseum, Seminary and Arroyo Viejo. Most striking, 81% of the vacant residential addresses in Oakland have been vacant for at least 36 months. This means that 3,620 homes in the City have vacant for at least three years.

Map 23: Percent of Vacant Residential Address by Census Tract, June 2013



2011 American Housing Survey

As mentioned above, not all data that are most relevant to issues at the nexus of health and housing are available at the scale that is most useful to a local analysis. For instance, the American Housing Survey (AHS) is a comprehensive longitudinal assessment of the housing inventory in the United States.[9] The AHS is sponsored by the U.S. Department of Housing and Urban Development and carried out by the U.S. Census Bureau. The AHS survey asks some very specific questions that are directly relevant to healthy housing issues; however, the one drawback for local work is that the data are only reported at the metropolitan area level. Thus, the data do not reveal any geographic variations within a city that might be used to direct local interventions. With that said, the AHS is useful for comparative metrics, such as seeing how one metro area ranks compared to another, or how certain sub-populations compare to each other within a given metro area.

The 2011 AHS includes data on the Oakland-Fremont-Hayward metropolitan area (referred to here as the Oakland metro area), which is inclusive of both Alameda and Contra Costa Counties. The AHS is conducted every other year, with a goal of interviewing respondents at the same housing units, adjusting for new construction, demolitions, and conversions. The units in the AHS have been selected specifically to represent a cross section of all housing units. Nationwide, the 2011 AHS included approximately 190,000 housing units over 29 different metropolitan areas. The survey selection for the Oakland metro area included 3,717 units. Given this sample size, every housing units in the Oakland metro survey represents itself and roughly 268 other units.

For the purposes of this report, the most compelling use of the AHS is its ability to compare the Oakland metro area to the 28 other metropolitan areas on specific housing issues that impact health. Table 3 below compiles ten key healthy housing metrics for the Oakland metro area from the AHS and ranks them in comparison to the other 28 metro areas in the survey. Of particular interest, the AHS breaks down the data in two useful ways: first, by tenure type, allowing a comparison of owner and renter-occupied units; and second, by select household types, providing insights into the experiences of African-American, Hispanic, elderly households, as well as households below the poverty line. Thus we are able to see how different household types compare to one another within a given metro area, as well as how they rank in comparison to 28 other metro areas.

American Housing Survey by Tenure Type

When comparing owner occupied units with renter occupied units, several indicators stand out. Overall, the Oakland metro area ranked quite poorly compared to the other AHS survey areas on two metrics: housing units that are "uncomfortably cold for 24 hours or more," and housing units with mold. Of all occupied units in the entire AHS, the Oakland metro area ranked 2nd worst among the 29 metro areas on the issue of heating problems, with nearly 11 percent of households being uncomfortably cold for 24 hours or more.

With respect to mold in the housing unit in the past 12 months, the Oakland metro area ranked 7th worst among all occupied units in the entire AHS. While 4 percent of all surveyed units in the Oakland metro area reportedly had a mold issue, the survey reveals a disparity between owner-occupied and renter-occupied units: renter households were 2.8 times more likely than owner households to have a mold problem.

[9] For more information about the American Housing Survey, see http://www.census.gov/housing/ahs/.

Table 3: Oakland-Fremont-Hayward AHS Area Rankings in the 2011 American Housing Survey

Worst Third **Middle Third** **Best Third**

By Tenure Type

	All Occupied Units		Owner Occupied Units		Renter Occupied Units	
	Rank	%	Rank	%	Rank	%
Severe or Moderate Physical Problems with Housing Unit	16	5.00%	11	2.73%	19	8.32%
Signs of Rodents (Rats, Mice, Other) in Last 12 Months	20	8.97%	15	10.25%	21	7.10%
Signs of Cockroaches in Last 12 Months	21	3.38%	19	2.04%	26	5.34%
Broken Plaster or Peeling Paint (Interior)	17	1.66%	17	1.23%	20	2.30%
Heating Problems: Uncomfortably Cold for 24 Hours or More	2	10.74%	2	10.50%	5	11.09%
Households with Children 6 to 17 Diagnosed with Asthma	16	9.98%	26	1.92%	7	20.96%
Housing Units & Households w/ No Working CO Detector	15	59.33%	12	56.96%	20	62.81%
Housing Units & Households w/ Musty Smells in Last 12 Months	18	13.28%	18	11.31%	11	16.16%
Housing Units & Households w/ Mold in the Last 12 Months	7	4.02%	18	2.28%	5	6.53%

Worst Third **Middle Third** **Best Third**

By Household Type

	Black		Hispanic		Elderly (65+)		Below Poverty	
	Rank	%	Rank	%	Rank	%	Rank	%
Severe or Moderate Physical Problems with Housing Unit	22	5.70%	22	4.62%	11	4.28%	12	10.71%
Signs of Rodents (Rats, Mice, Other) in Last 12 Months	19	8.44%	10	11.93%	19	7.11%	25	8.06%
Signs of Cockroaches in Last 12 Months	24	6.27%	25	5.77%	22	1.62%	26	7.33%
Broken Plaster or Peeling Paint (Interior)	7	4.22%	20	1.15%	7	1.67%	7	5.04%
Heating Problems: Uncomfortably Cold for 24 Hours or More	4	15.39%	15	10.39%	5	9.27%	5	14.47%
Households with Children 6 to 17 Diagnosed with Asthma	3	38.46%	7	21.34%	4	29.23%	8	33.98%
Visited ER in Past 12 Months Because of Asthma	2	17.22%	27	0.57%	10	1.54%	2	12.43%
Housing Units & Households w/ No Working CO Detector	14	64.31%	17	67.86%	10	64.13%	19	64.65%
Housing Units & Households w/ Musty Smells in Last 12 Months	20	14.60%	15	14.50%	13	12.87%	25	13.64%
Housing Units & Households w/ Mold in the Last 12 Months	2	9.58%	8	6.86%	19	1.49%	11	6.96%

Source: 2011 American Housing Survey

2011 American Housing Survey Areas

Anaheim-Santa Ana, CA AHS Area
Atlanta-Sandy Springs-Marietta, GA AHS Area
Birmingham-Hoover, AL AHS Area
Buffalo-Niagara Falls, NY AHS Area
Charlotte-Gastonia-Concord, NC-SC AHS Area
Cincinnati-Middletown, OH-KY-IN AHS Area
Cleveland-Elyria-Mentor, OH AHS Area
Columbus, OH AHS Area
Dallas-Plano-Irving, TX AHS Area
Denver, CO AHS Area
Fort Worth-Arlington, TX AHS Area
Indianapolis-Carmel, IN AHS Area
Kansas City, MO-KS AHS Area
Los Angeles-Long Beach, CA AHS Area
Memphis, TN-MS-AR AHS Area
Milwaukee-Waukesha-West Allis, WI AHS Area
New Orleans-Metairie-Kenner, LA AHS Area
Oakland-Fremont-Hayward, CA AHS Area
Phoenix-Mesa-Glendale, AZ AHS Area
Pittsburgh, PA AHS Area
Portland-Vancouver-Beaverton, OR-WA AHS Area
Providence, RI AHS Area
Riverside-San Bernardino-Ontario, CA AHS Area
Sacramento--Arden-Arcade--Roseville, CA AHS Area
San Diego-Carlsbad-San Marcos AHS Area
San Francisco-San Mateo-Redwood City, CA AHS Area
San Jose-Sunnyvale-Santa Clara, CA AHS Area
St. Louis, MO-IL AHS Area
Virginia Beach-Norfolk-Newport News, VA-NC AHS Area

On all but one metric, renter households fared worse than owner households. Overall, renter units surveyed in the Oakland metro area were three times more likely than owner-occupied units to have severe or moderate physical problems with their housing. The most significant disparity between renters and owners surveyed is in the category of households with children between the ages of 6 and 17 diagnosed with asthma: 21 percent of Oakland metro area renter households in the sample had children with asthma, compared to only 2 percent of owner-occupied households.

American Housing Survey by Household Type

The subcategories of household types surveyed in the AHS provide for a more nuanced picture of how certain populations are differentially experiencing housing related problems. Overall, the Oakland metro area ranked worse among the 29 metro areas for the four specific household types than the rankings by tenure type. Compared to the four subpopulations surveyed in the other metro areas, Oakland ranked among the worst third for broken plaster or peeling paint, heating problems, children with asthma, emergency room visits for asthma, and mold.

The category where respondents in the Oakland metro area consistently fared the poorest was households with children diagnosed with asthma. 38 percent of African-American households in the Oakland metro area reported having children with asthma, ranking third worst among the same subpopulation in the other 28 metro areas. Likewise, 34 percent of households below the poverty line had children with asthma, ranking eighth worst among the 29 metro areas. 29 percent of elderly households and 21 percent of Hispanic households also reported having children with asthma. Among Oakland metro area respondents, an African-American household was 19 times more likely to have a child with asthma compared to a typical owner-occupied household.

Among all respondents in the Oakland metro area, those households below the poverty line had the worst experiences with housing units having severe or moderate physical problems. A household in poverty was nearly four times more likely to have physical problems with their housing unit compared to a typical owner-occupied household. Similarly, an African-American household in the Oakland survey was four times more likely than a typical owner-occupied household, and over two times more likely than the entire universe of households, to have an issue with mold.

Code Enforcement and Building Permits

While the American Housing Survey provides an insightful high-level picture of specific housing problems impacting Oakland area households, the lack of data at a neighborhood level limits our ability to assess any geographic differences below the two county metropolitan region. This section supplements the metro area overview with a unique set of local government data: code enforcement complaints and building permits. Utilizing a dataset provided by the City of Oakland covering a nearly ten year period of code enforcement complaints and building permits, we are able to evaluate two important questions. First, where is the City's code enforcement staff finding problems with the housing stock or built environment, and what types of problems are they encountering? And second, where are building permits being issued in the City, and how might this reflect upon investments and improvements being made to the housing stock?

The role of code enforcement in the City of Oakland is to ensure compliance with the City's building, housing, and zoning codes. The standards set forth in these codes are developed to protect the health and safety of residents and the public. While visible nuisances may in themselves elicit direct action from the City's building services staff, much of code enforcement in Oakland is complaint-driven. Based on this structure, there are likely some limitations to the dataset of code enforcement complaints.

Between 2003 and July 2013, there were over 60,000 code enforcement complaints in the City of Oakland. Given the largely complaint-driven nature of code compliance, it is reasonable to assume that this is an under-representation of the real breadth of code compliance problems that likely exist throughout the City. This raises important questions regarding how or when a resident might complain about an issue, or what problems actually constitute a legitimate code complaint worth pursuing. Further, knowing that Oakland is diverse with many immigrant populations, there are likely both language and cultural barriers that might impact pro-active participation. Quite simply, some residents may not be fully aware of their rights under the various City codes, or may choose not to complain for other intervening reasons.

The logical opposite of residents not knowing their rights or when it is appropriate to complain is also the possibility of some residents abusing a complaint-driven system. There could potentially be an over sample in some areas due to particularly active neighbors. In each instance, building services staff must investigate the complaint, and evaluate the necessary course of action to address the problem. Table 4 compiles residential code enforcement complaints in Oakland relevant to healthy housing concerns; these account for approximately 85 percent of all code enforcement records between 2003 and July 2013. Nearly two-thirds of all residential complaints were filed against single-family homes, with 2-4 unit buildings accounting for 29 percent of complaints, and 5-plus unit buildings representing 10 percent.

Overall, 93 percent of the residential complaints are distributed among three complaint categories: occupied blight, exterior blight, and work without a permit. The category of *occupied blight* accounts for two-thirds of the residential complaints relevant to healthy housing concerns, with exterior blight and work without a permit representing 16.6 percent and 13.5 percent, respectively.

Each record in the code complaint data—aside from being segmented into discrete complaint types—also contains a narrative description of the specific issue at hand. However, the narrative field is highly subjective and based on the data entry of each inspector. Unfortunately, this additional information is not

captured in a standardized manner that would allow for a more nuanced analysis of the specific issues associated with each complaint type.

Table 4: Healthy Housing Related Code Enforcement Complaints by Residential Type, 2003-July 2013

Complaint Type	Single Family		2-4 Units		Multi-Family (5+ Units)		Total	
	Count	%	Count	%	Count	%	Count	%
Occupied Blight	19,000	60.1%	9,741	66.2%	3,838	74.4%	**32,579**	63.3%
Exterior Blight	5,562	17.6%	2,290	15.6%	686	13.3%	**8,538**	16.6%
Work Without Permit	4,746	15.0%	1,758	12.0%	447	8.7%	**6,951**	13.5%
Foreclosed Vacant Building	1,523	4.8%	487	3.3%	13	0.3%	**2,023**	3.9%
Substandard	767	2.4%	356	2.4%	83	1.6%	**1,206**	2.3%
Health Inspections (Lead/ Mold/ Pest)	42	0.1%	75	0.5%	91	1.8%	**208**	0.4%
Total	**31,640**	100%	**14,707**	100%	**5,158**	100%	**51,505**	100%

Source: City of Oakland; Alameda County Assessor

Occupied Blight

The most relevant category to healthy housing issues is what the City of Oakland Building Services staff refers to as *occupied blight.* Complaints in the occupied blight category relate to interior habitability issues that are generally derived from tenant complaints, as well as structural defects or failures. To the extent that habitability impacts health and might be reflected in the City's code enforcement data, occupied blight is the key category to monitor.

Map 24 shows code enforcement complaints for occupied blight in Oakland by Census tract between 2003 and July 2013. There were over 32,500 occupied blight complaints over this time span, with 58% at single-family properties and 42% at multi-unit properties. Additionally, there is some variation within residential types, as 75 percent of complaints at 5-plus unit multifamily properties were for occupied blight, compared to 60 percent of complaints at single-family homes.

The areas with the largest numbers of occupied blight complaints are nearly all in the City's flatland neighborhoods, with one outlier in Montclair. Longfellow and Hoover/Foster in West Oakland, the San Antonio, Fruitvale, Lower Maxwell Park, and Havenscourt are among the neighborhoods with the most occupied blight complaints. In these tracts, as many as 6 out of 10 households may have received an occupied blight complaint b/w 2003 and July 2013 (Note: this is a gross ratio, not accounting for the possibility of multiple complaints at the same property).

In an attempt to extract more detail from the occupied blight complaint data, a word frequency analysis was conducted on the narrative field associated with each occupied blight record. Table 5 below displays the top 50 terms used to provide context and detail to the code enforcement inspections. Terms such as trash, garbage, debris, as well as overgrowth and vegetation, are the most common descriptors. Mold is mentioned 623 times. Appendix Two shows a complete frequency analysis of terms that appear at least 20 times in the database.

Map 24: Code Enforcement Complaints for Occupied Blight, 2003-July 2013

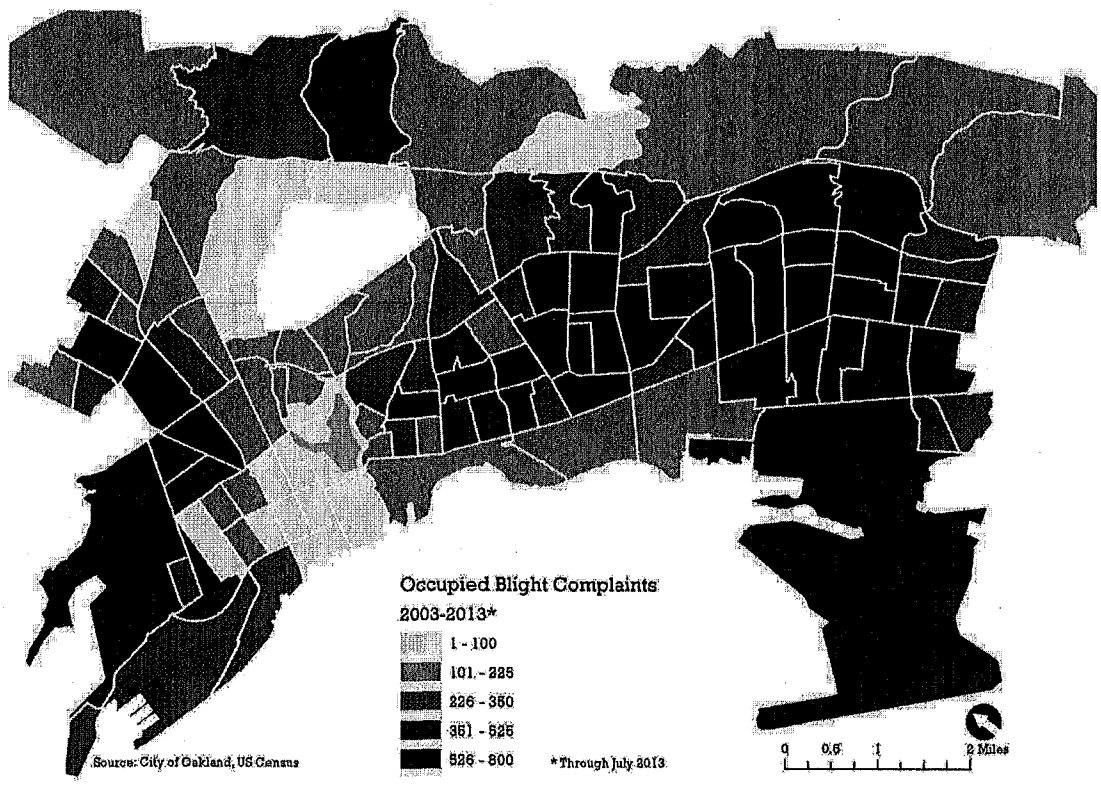


Table 5: Top 50 Terms Used to Describe Occupied Blight Complaints in Oakland

RANK	TERM(S)	FREQUENCY	RANK	TERM(S)	FREQUENCY
1	TRASH	11,028	26	MOLD	623
2	DEBRIS	9,364	27	BATHROOM; BATHRM	623
3	OVERGROWN; OVERGROWTH	8,691	28	PLUMBING	602
4	VEGETATION	5,777	29	LAWN	579
5	VEHICLE; VEHICLES	2,498	30	ROOF; ROOFING	574
6	GARBAGE	1,979	31	KITCHEN	561
7	WINDOWS; WINDOW	1,567	32	ILLEGAL	551
8	WEEDS	1,422	33	CEILING	550
9	LEAKING; LEAKS; LEAK; LEAKAGE	1,416	34	STAIRS; STAIR; STAIRWAY	525
10	DRIVEWAY	1,240	35	PAINT	522
11	GARAGE	1,224	36	FIRE	502
12	HEATER; HEAT; HEATING; HEATERS	1,204	37	JUNK	423
13	FENCE	1,117	38	MATTRESS; MATTRESSES	410
14	CARS; CAR	1,072	39	APPLIANCES; APPLIANCE	402
15	DAMAGED; DAMAGE	1,022	40	EXTERIOR	364
16	VACANT	905	41	PORCH	354
17	SIDEWALK	901	42	UNSECURED; UNSECURE	344
18	WALL; WALLS	891	43	GRAFFITI	344
19	ELECTRICAL; ELECTRICITY; POWER; ELECTRIC	860	44	FLOOR; FLOORING	335
20	FURNITURE; FURNITURES	835	45	BASEMENT	332
21	UNAPPROVED	749	46	PEELING	325
22	ACCUMULATION	740	47	TOILET; TOILETS	319
23	ABANDONED	682	48	DILAPIDATED	293
24	DOOR; DOORS	680	49	SINK	289
25	BLIGHTED; BLIGHT	652	50	MILDEW	250

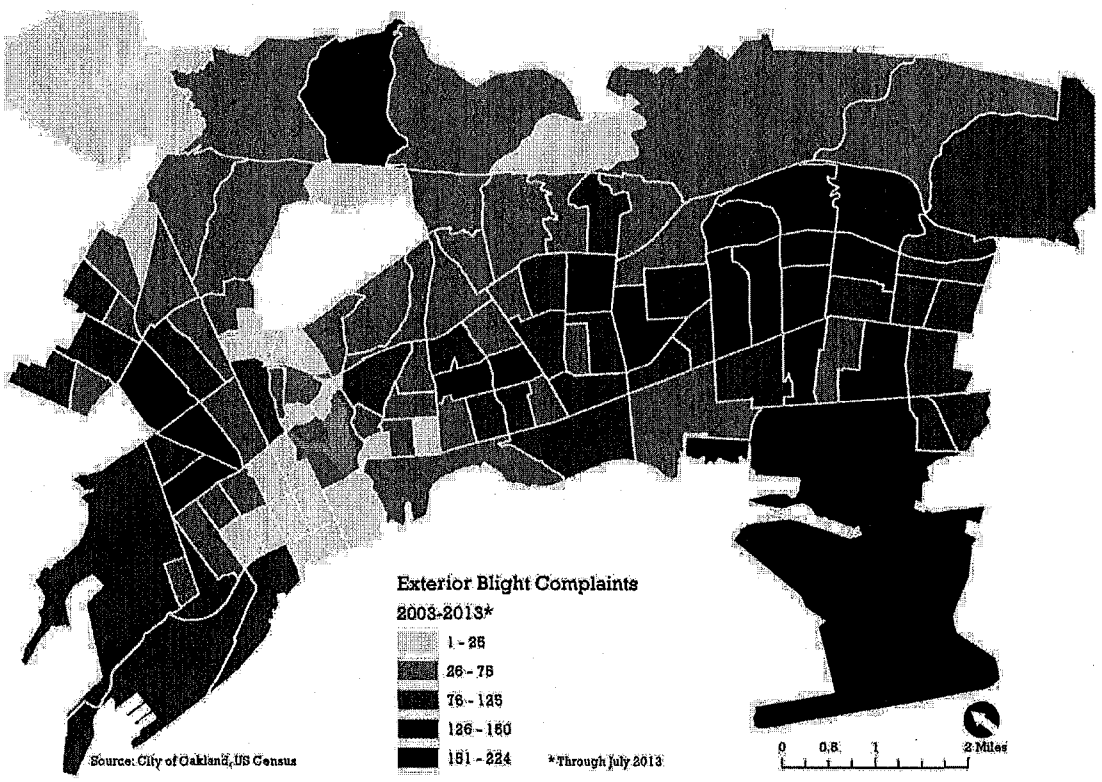
Exterior Blight

The second most common code enforcement complaint is for what City Building Services staff refers to as *exterior blight.* As the title suggests, this category deals with issues exterior to homes or structures, including: garbage, trash, debris, overgrowth, trash cans in view, inoperable or unlicensed vehicles, unapproved storage, offensive odors (paint, chemicals), fire hazards, and rat or other vector attractors.

There were 8,538 complaints for exterior blight between 2003 and July 2013, representing nearly 17 percent of all the healthy housing related complaints; 65 percent of these complaints were at single family homes, 27 percent were at 2 to 4 unit properties, and 8 percent at 5-plus unit multi-family properties. Many of the same tracts that had the most occupied blight complaints also rank high among those with the most exterior blight complaints, including Longfellow and Hoover/Foster in West Oakland, Lower Maxwell Park, Havenscourt, and the same Montclair tract in the hills.

While exterior blighting factors may seem removed from issues that impact health on the inside of homes, some can have spillover effects that are directly deleterious to health. For instance, garbage and debris can harbor various pests and vectors, which can lead to problems that ultimately manifest themselves inside homes. Similarly, an overgrowth of vegetation adjacent to a building can facilitate moisture intrusion—a problem that could result in mildew or mold growth.

Map 25: Code Enforcement Complaints for Exterior Blight (by Census Tract), 2003-July 2013



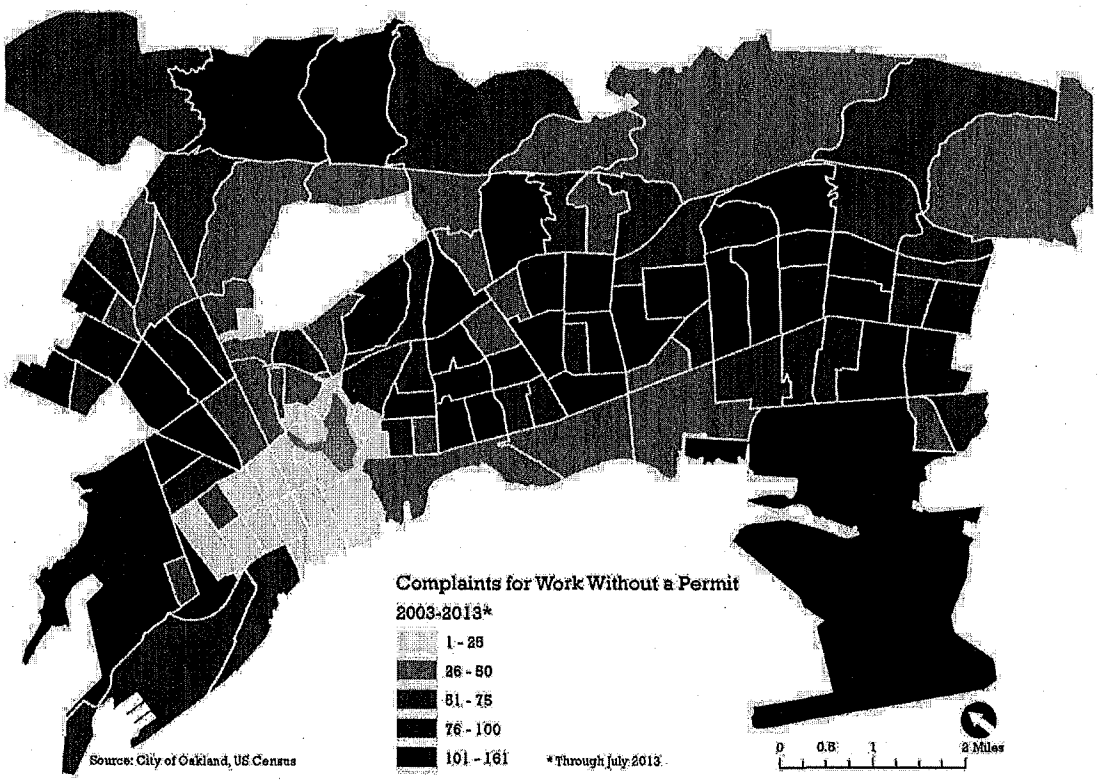
Work without a Permit

Between 2003 and July 2013, there were nearly 7,000 complaints for *work without a permit.* 69 percent of complaints for work without a permit were filed at single-family homes, 25 percent at 2-4 unit properties, and 6 percent at 5-plus multi-family properties.

Conducting work on a housing unit without a proper permit can have serious consequences for the health of residents living in such a property. As mentioned above, the building, housing, and zoning codes are in place to ensure the health and safety of residents. Just because work is done without a permit does not necessarily mean that the work is wrong or hazardous. However, by not following the proper channels to obtain the necessary permits, there is no effective oversight or tracking of the work to ensure a standard of safety. Ultimately, there could be significant repercussions with respect to the habitability of a residence if the work was done improperly.

Map 26 shows code enforcement complaints for work without a permit among Oakland Census tracts. Again, complaints for work without a permit follow a similar pattern compared to the occupied and exterior blight complaints, yet are somewhat more evenly distributed among Oakland neighborhoods. The highest numbers of complaints are in the flatlands, with two outlier tracts in the hills around Montclair and Glen Highlands.

Map 26: Code Enforcement Complaints for Work without a Permit, 2003-July 2013



Building Permits

In some respects, the inverse measure of complaints for doing work without permit is the issuance of permits to do work. Likewise, if lacking a permit presents a liability for health and safety, the completion of work with a permit can logically be viewed as an investment in improving the housing stock, and by extension, the health of residents.

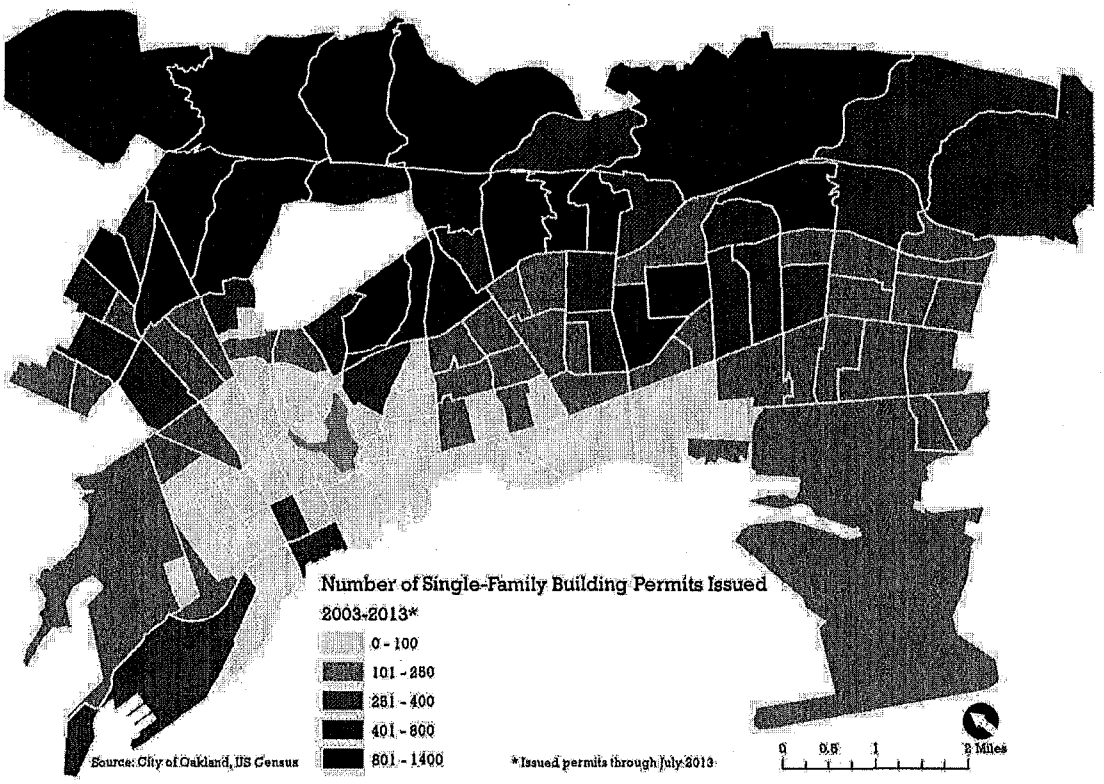
The focus of this section is on building permits issued for single-family homes between 2003 and July 2013. While data from the City of Oakland includes information on permits issued for multi-unit properties, it is not always apparent in the data whether an issued permit refers to a single-unit, multiple units, or reflects a building-wide project. Due to these ambiguities in the data, the majority of our analysis has been limited to single-family properties.

There were 35,283 issued building permits for properties in Oakland between 2003 and July 2013. Among these, over 25,000 permits were issued for single-family homes, and another 6,500 at multi-unit properties.

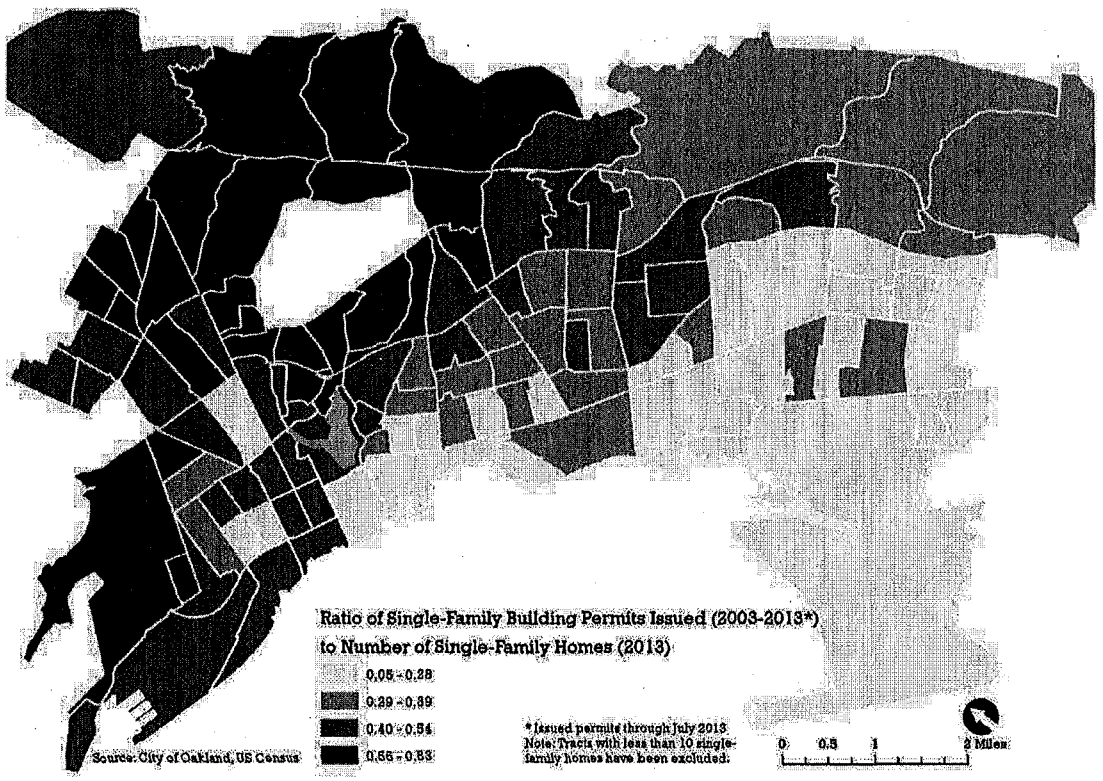
Map 27 shows the geographic distribution of the issued single-family permits throughout Oakland between 2003 and July 2013. Overall, the majority of permit activity is concentrated in the Oakland hills. In Map 16 above we saw where single-family properties are concentrated throughout the various neighborhoods of the City—particularly in the East Oakland flatlands and the neighborhoods in the lower hills. The location of single-family permit activity does not align with the actual areas with the most single-family homes; instead, the existing single-family housing stock is largely being improved in the more affluent hill neighborhoods.

Map 28 displays this discrepancy, showing a ratio of issued single-family permits to the number of single-family homes per Census tract. Here we start to see where investment is actually being made to improve the housing stock, and equally importantly, where improvements are not being made.

Map 27: Number of Single-Family Building Permits Issued by Census Tract, 2003-July 2013



Map 28: Ratio of Single-Family Permits Issued to Number of Single-Family Homes



Conclusion

We know from a wealth of research that there are intimate connections between the health of people and the housing units they inhabit. Further, there are countless ways that a home can impact health, whether it is a leaky pipe that results in mold growth, poor indoor air quality, unaffordable rents, peeling paint, dust mites, burn and fall hazards, or seismic or other structural deficiencies. Each of these issues—on their own—can be worlds unto themselves, with their own complications, causes, and remedies.

The goal of this report has been to take what we know from existing research on housing and health, and compile local data to shed light on the issues that Oakland residents are confronting. While detailed information on very specific housing problems may not always be available, we have been able to establish some baseline indicators that can serve as guideposts for healthy housing interventions and policy efforts.

The data presented in this report show that Oakland is a city of disparities, many of which are reproduced in the City's topography. Oakland—as a whole—is incredibly diverse; the same cannot be said for many neighborhoods in the City. There is an incredible amount of overlap between Oakland's communities of color, the renter populations in the City, the areas with high enrollment in social safety net programs, and neighborhoods with poor health outcomes. More often than not, these neighborhoods also have the highest counts of residential code enforcement complaints, indicating problems with the housing stock. These discrete data pieces, when viewed in concert, begin to paint a high level picture of resident experiences and vulnerabilities in Oakland, neighborhood by neighborhood.

This report also reveals the need for additional data, as well as more detailed data. We identified unique data from several government departments and agencies that have the potential of being useful, but were not available in a useable format for our analysis. Developing relationships with these agencies and departments, and sharing the rationale for why access to these data is important, could help extend this research into powerful new directions.

Likewise, the need for reliable, local data at the parcel or record level is of paramount importance. Such fine-grained data allow for the matching of many sources of data to one common identifier—a house or parcel—and present many possibilities for comparative analysis. As it currently stands, the data released by the U.S. Census and the American Community Survey have severe limitations in their usefulness below the neighborhood level. In the absence of a periodic citywide survey of the issues impacting housing quality and habitability, an information void will persist, inhibiting a full telling of the crucial story about how Oakland residents are impacted by their housing.

Works Consulted

Alameda County Public Health Department, *Life and Death from Unnatural Causes: Health and Social Inequity in Alameda County*, August 2008.

Bashir, Samiya A., "Home is Where the Harm Is: Inadequate Housing as a Public Health Crisis," *American Journal of Public Health*, 2002; 92(5).

Breysse, Patrick, et. al., "The Relationship between Housing and Health: Children at Risk," *Environmental Health Perspectives*, 2004; 112(15).

Bures, Regina M., "Childhood Residential Stability and Health at Midlife," *American Journal of Public Health*, 2003; 93(7).

Committee on Psychosocial Aspects of Child and Family Health, Committee on Early childhood, Adoption, and Dependent Care, and Section on Developmental Behavioral Pediatrics, et. al., "Early Childhood Adversity, Toxic Stress, and the Role of the Pediatrician: Translating Developmental Science into Lifelong Health," *Pediatrics*, 2012; 129(224).

DiGuiseppi, Carolyn, et. al., "Housing Interventions and Control of Injury-Related Structural Deficiencies: A Review of the Evidence," *Journal of Public Health Management and Practice*, 2010; 16(5).

Drum, Kevin, "America's Real Criminal Element: Lead," *Mother Jones*, January/February 2013.

Fertig, Angela R. and David A. Reingold, "Public Housing, Health, and Health Behaviors: Is There a Connection?" *Journal of Policy Analysis and Management*, 2007; 26(4).

Fullilove, Mindy T., *Root Shock: How Tearing Up Neighborhoods Hurts America, and What We Can Do About It*, New York: One World, 2004.

Fullilove, Mindy T., Lesley Green, and Robert E. Fullilove III, "Building Momentum: An Ethnographic Study of Inner-City Redevelopment," *American Journal of Public Health*, 1999; 89(6).

Gaitens, Joanna M., et. al., "Exposure of U.S. Children to Residential Dust Lead, 1999-2004: I. Housing and Demographic Factors," *Environmental Health Perspectives*, 2009; 117(3).

Jacobs, David E., et. al., "A Systematic Review of Housing Interventions and Health: Introduction, Methods, and Summary Findings," *Journal of Public Health Management and Practice*, 2010; 16(5).

Jacobs, David E. and Andrea Baeder, *Housing Interventions and Health: A Review of the Evidence*, National Center for Healthy Housing, 2009.

Jacobs, David E. et. al., "The Relationship of Housing Population and Health: A 30-Year Retrospective Analysis," *Environmental Health Perspectives*, 2009; 117(4).

Jacobs, David E., Tom Kelly, and John Sobolewski, "Linking Public Health, Housing, and Indoor Environmental Policy: Successes and Challenges at Local and Federal Agencies in the United States," *Environmental Health Perspectives*, 2007; 115(6).

Kirkpatrick, Sharon I. and Valerie Tarasuk, "Adequacy of Food Spending is Related to Housing Expenditures Among Lower-Income Canadian Households," *Public Health Nutrition*, 2007; 10(12).

Klass, Perri, "Poverty as a Childhood Disease," *The New York Times*, 13 May 2013.
Krieger, James and Donna L. Higgins, "Housing and Health: Time Again for Public Health Action," *American Journal of Public Health*, 2002; 92(5).

Lubell, Jeffrey, et. al., *Housing and Health: New Opportunities for Dialogue and Action*, National Center for Healthy Housing, July 2012.

Ludwig, Jens, et. al., "Neighborhoods, Obesity, and Diabetes – A Randomized Social Experiment," *The New England Journal of Medicine*, 2011; 365(16).

Meyers, Alan, et. al., "Subsidized Housing and Children's Nutrition Status: Data from a Multisite Surveillance Study," *Archives of Pediatrics and Adolescent Medicine*, 2005; 159.

Rauh, Virginia, Ginger L. Chew and Robin S. Garfinkel, "Deteriorated Housing Contributes to High Cockroach Allergen Levels in Inner-City Households," *Environmental Health Perspectives*, 2002; 110(2).

Robert Wood Johnson Foundation, *Where We Live Matters for Our Health: The Links Between Housing and Health*, Commission to Build a Healthier America, Issue Brief 2: Housing and Health, 2008.

Saegert, Susan, Desiree Fields and Kimberly Libman, "Mortgage Foreclosure and Health Disparities: Serial Displacement as Asset Extraction in African American Populations," *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 2011; 88(3).

Saegert, Susan, et. al., "Healthy Housing: A Structured Review of Published Evaluations of US Interventions to Improve Health by Modifying Housing in the United States, 1990-2001," *American Journal of Public Health*, 2003; 93(9).

Shenassa, Edmond D., Amy Stubbendick, and Mary Jean Brown, "Social Disparities in Housing and Related Pediatric Injury: A Multilevel Study," *American Journal of Public Health*, 2004; 94(4).

The Baltimore Neighborhood Indicators Alliance, *Analysis of the Green and Healthy Homes Initiative's Foreclosure Prevention Efforts in Baltimore*, BNIA-University of Baltimore, April 2013.

Appendices

Severe or Moderate Physical Problems with Housing Unit

	By Tenure						By Household Type							
	Occupied Units		Owner Occupied Units		Renter Occupied Units		Black		Hispanic		Elderly (65+)		Below Poverty	
Metropolitan Area	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Anaheim-Santa Ana, CA AHS Area	7.98%	2	2.46%	15	15.54%	2	7.09%	18	10.35%	5	5.55%	5	8.50%	21
Atlanta-Sandy Springs-Marietta, GA AHS Area	3.65%	22	2.18%	21	6.57%	25	5.23%	23	2.75%	25	3.34%	15	8.70%	20
Birmingham-Hoover, AL AHS Area	6.46%	8	5.37%	1	9.43%	13	10.22%	11	8.20%	9	9.41%	1	18.10%	1
Buffalo-Niagara Falls, NY AHS Area	5.28%	12	3.12%	9	9.46%	12	10.63%	8	1.99%	27	3.00%	16	13.98%	4
Charlotte-Gastonia-Concord, NC-SC AHS Area	3.50%	23	1.57%	25	7.04%	23	5.06%	24	5.55%	20	1.68%	25	5.32%	28
Cincinnati-Middletown, OH-KY-IN AHS Area	5.79%	9	3.58%	4	10.64%	8	11.10%	7	3.57%	23	2.96%	17	12.77%	7
Cleveland-Elyria-Mentor, OH AHS Area	5.20%	13	2.43%	16	11.28%	7	8.83%	12	7.33%	13	2.48%	20	9.84%	17
Columbus, OH AHS Area	4.68%	19	2.59%	14	7.95%	21	11.68%	6	6.32%	18	4.15%	12	9.86%	16
Dallas-Plano-Irving, TX AHS Area	5.73%	10	3.29%	7	9.62%	10	6.36%	20	9.28%	7	6.27%	4	12.02%	9
Denver, CO AHS Area	4.35%	21	1.67%	24	9.00%	15	8.41%	14	7.31%	15	2.21%	21	8.04%	22
Fort Worth-Arlington, TX AHS Area	4.92%	17	2.72%	12	8.78%	18	3.59%	26	7.33%	14	3.63%	13	11.97%	10
Indianapolis-Carmel, IN AHS Area	2.63%	29	1.14%	27	5.70%	27	8.18%	15	1.85%	28	1.22%	29	7.84%	23
Kansas City, MO-KS AHS Area	3.11%	27	1.35%	26	6.66%	24	4.07%	25	7.42%	12	2.04%	23	6.35%	27
Los Angeles-Long Beach, CA AHS Area	6.69%	6	3.56%	5	9.48%	11	6.81%	19	7.73%	10	4.85%	8	7.76%	24
Memphis, TN-MS-AR AHS Area	7.18%	4	4.56%	2	12.07%	5	12.06%	5	9.61%	6	7.17%	3	14.59%	3
Milwaukee-Waukesha-West Allis, WI AHS Area	7.84%	3	3.48%	6	15.76%	1	12.36%	3	26.24%	1	4.92%	7	9.99%	15
New Orleans-Metairie-Kenner, LA AHS Area	5.59%	11	3.78%	3	8.99%	16	10.35%	10	3.42%	24	7.22%	2	10.16%	14
Oakland-Fremont-Hayward, CA AHS Area	**5.00%**	**16**	**2.73%**	**11**	**8.32%**	**19**	**5.70%**	**22**	**4.62%**	**22**	**4.28%**	**11**	**10.71%**	**12**
Phoenix-Mesa-Glendale, AZ AHS Area	3.11%	26	2.36%	18	4.48%	29	0.00%	29	5.45%	21	1.70%	24	4.39%	29
Pittsburgh, PA AHS Area	4.47%	20	2.65%	13	8.86%	17	8.18%	16	11.17%	3	1.48%	28	9.62%	18
Portland-Vancouver-Beaverton, OR-WA AHS Area	3.33%	24	0.76%	29	7.97%	20	1.30%	28	2.29%	26	1.49%	27	10.44%	13
Providence, RI AHS Area	6.65%	7	3.11%	10	12.19%	4	10.51%	9	14.07%	2	4.59%	9	9.43%	19
Riverside-San Bernadino-Ontario, CA AHS Area	4.74%	18	3.25%	8	7.37%	22	7.96%	17	5.79%	19	2.60%	19	12.78%	6
Sacramento--Arden-Arcade--Roseville, CA AHS Area	5.04%	14	1.83%	23	9.21%	14	14.17%	1	6.94%	16	2.76%	18	12.14%	8
San Diego-Carlsbad-San Marcos AHS Area	6.87%	5	2.33%	19	12.04%	6	12.16%	4	10.38%	4	5.11%	6	11.28%	11
San Francisco-San Mateo-Redwood City, CA AHS Area	8.08%	1	2.42%	17	13.27%	3	12.94%	2	7.64%	11	3.40%	14	15.85%	2
San Jose-Sunnyvale-Santa Clara, CA AHS Area	3.32%	25	1.13%	28	6.20%	26	3.49%	27	6.67%	17	1.57%	26	7.39%	25
St. Louis, MO-IL AHS Area	3.00%	28	2.26%	20	4.92%	28	5.89%	21	0.00%	29	2.17%	22	6.55%	26
Virginia Beach-Norfolk-Newport News, VA-NC AHS Area	5.03%	15	1.86%	22	10.46%	9	8.62%	13	8.66%	8	4.45%	10	13.42%	5

Housing Units and Households with Mold in the Last 12 Months

	By Tenure						By Household Type							
	Occupied Units		Owner Occupied Units		Renter Occupied Units		Black		Hispanic		Elderly (65+)		Below Poverty Level	
Metropolitan Area	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Anaheim-Santa Ana, CA AHS Area	3.13%	19	1.64%	25	5.16%	12	3.94%	18	5.07%	15	1.73%	17	2.83%	27
Atlanta-Sandy Springs-Marietta, GA AHS Area	3.26%	16	2.19%	20	5.37%	11	4.16%	14	6.35%	10	2.01%	14	5.93%	16
Birmingham-Hoover, AL AHS Area	4.15%	5	1.91%	22	10.43%	1	10.67%	1	14.75%	2	3.17%	3	8.81%	4
Buffalo-Niagara Falls, NY AHS Area	3.83%	10	3.34%	4	4.79%	17	4.31%	13	1.99%	24	2.35%	6	9.91%	2
Charlotte-Gastonia-Concord, NC-SC AHS Area	3.00%	21	2.84%	7	3.30%	24	2.93%	23	5.18%	14	4.77%	1	6.76%	12
Cincinnati-Middletown, OH-KY-IN AHS Area	3.31%	15	2.59%	10	4.87%	16	6.36%	9	1.34%	28	1.09%	23	6.01%	15
Cleveland-Elyria-Mentor, OH AHS Area	3.15%	18	2.52%	12	4.54%	18	3.73%	19	2.65%	19	1.32%	21	3.69%	26
Columbus, OH AHS Area	3.36%	14	3.60%	3	3.00%	26	6.76%	8	1.58%	27	0.76%	29	5.31%	18
Dallas-Plano-Irving, TX AHS Area	2.30%	25	1.77%	23	3.14%	25	2.86%	24	1.98%	25	2.04%	13	4.34%	22
Denver, CO AHS Area	1.53%	29	1.38%	26	1.80%	29	1.65%	29	1.99%	23	0.87%	27	2.48%	28
Fort Worth-Arlington, TX AHS Area	1.90%	28	0.77%	28	3.88%	22	3.39%	20	2.49%	21	0.84%	28	3.74%	25
Indianapolis-Carmel, IN AHS Area	3.46%	12	2.13%	21	6.19%	8	6.17%	10	9.45%	3	1.47%	20	7.84%	6
Kansas City, MO-KS AHS Area	2.73%	23	2.33%	17	3.56%	23	2.57%	26	2.87%	18	2.15%	12	5.37%	17
Los Angeles-Long Beach, CA AHS Area	3.80%	11	2.43%	16	5.00%	13	4.01%	17	5.55%	12	2.34%	7	5.07%	20
Memphis, TN-MS-AR AHS Area	5.06%	1	4.63%	1	5.86%	10	7.20%	6	1.31%	29	4.59%	2	8.89%	3
Milwaukee-Waukesha-West Allis, WI AHS Area	2.48%	24	2.44%	15	2.56%	28	8.06%	4	4.97%	17	1.28%	22	3.86%	24
New Orleans-Metairie-Kenner, LA AHS Area	2.07%	27	1.68%	24	2.83%	27	2.49%	27	1.71%	26	1.06%	24	1.95%	29
Oakland-Fremont-Hayward, CA AHS Area	**4.02%**	**7**	**2.28%**	**18**	**6.53%**	**5**	**9.58%**	**2**	**6.86%**	**8**	**1.49%**	**19**	**6.96%**	**11**
Phoenix-Mesa-Glendale, AZ AHS Area	2.16%	26	1.02%	27	4.25%	20	2.81%	25	2.52%	20	1.64%	18	4.03%	23
Pittsburgh, PA AHS Area	4.52%	3	3.79%	2	6.28%	7	6.99%	7	21.28%	1	2.31%	9	7.31%	9
Portland-Vancouver-Beaverton, OR-WA AHS Area	4.14%	6	2.76%	8	6.66%	3	3.25%	21	8.38%	5	1.89%	15	7.24%	10
Providence, RI AHS Area	3.41%	13	2.92%	6	4.18%	21	7.96%	5	5.43%	13	2.15%	11	8.49%	5
Riverside-San Bernadino-Ontario, CA AHS Area	4.00%	8	2.67%	9	6.36%	6	4.87%	12	4.99%	16	2.32%	8	7.75%	7
Sacramento--Arden-Arcade--Roseville, CA AHS Area	4.36%	4	2.46%	13	6.83%	2	2.97%	22	7.85%	6	1.82%	16	6.33%	14
San Diego-Carlsbad-San Marcos AHS Area	3.95%	9	3.07%	5	4.95%	14	2.05%	28	5.68%	11	3.13%	4	5.27%	19
San Francisco-San Mateo-Redwood City, CA AHS Area	4.65%	2	2.54%	11	6.58%	4	8.38%	3	9.24%	4	1.01%	26	4.62%	21
San Jose-Sunnyvale-Santa Clara, CA AHS Area	2.96%	22	0.73%	29	5.91%	9	4.07%	16	7.38%	7	1.05%	25	6.42%	13
St. Louis, MO-IL AHS Area	3.01%	20	2.46%	14	4.44%	19	4.09%	15	6.67%	9	2.28%	10	7.59%	8
Virginia Beach-Norfolk-Newport News, VA-NC AHS Area	3.22%	17	2.21%	19	4.93%	15	5.83%	11	2.16%	22	2.64%	5	11.54%	1

Housing Units and Households with Musty Smells in Last 12 Months

	By Tenure						By Household Type							
	Occupied Units		Owner Occupied Units		Renter Occupied Units		Black		Hispanic		Elderly (65+)		Below Poverty	
Metropolitan Area	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Anaheim-Santa Ana, CA AHS Area	13.71%	15	11.46%	17	16.80%	7	25.98%	1	16.48%	8	13.64%	11	18.12%	12
Atlanta-Sandy Springs-Marietta, GA AHS Area	13.83%	14	13.03%	12	15.41%	20	14.28%	21	14.15%	16	13.79%	10	17.03%	18
Birmingham-Hoover, AL AHS Area	15.18%	8	13.62%	11	19.58%	1	20.98%	7	22.13%	2	9.63%	24	22.56%	4
Buffalo-Niagara Falls, NY AHS Area	15.52%	5	16.16%	4	14.25%	24	11.86%	26	13.25%	19	15.40%	5	22.87%	3
Charlotte-Gastonia-Concord, NC-SC AHS Area	11.44%	27	11.60%	16	11.20%	29	12.73%	24	8.50%	26	11.14%	19	17.91%	13
Cincinnati-Middletown, OH-KY-IN AHS Area	18.56%	1	19.45%	1	16.64%	8	23.06%	5	23.66%	1	16.18%	3	19.87%	6
Cleveland-Elyria-Mentor, OH AHS Area	16.14%	3	16.39%	3	15.59%	17	16.42%	15	13.03%	20	12.33%	14	14.63%	21
Columbus, OH AHS Area	14.97%	9	14.33%	9	15.97%	12	23.75%	4	8.42%	27	18.46%	1	28.60%	1
Dallas-Plano-Irving, TX AHS Area	11.79%	24	10.38%	23	14.04%	26	14.77%	18	12.16%	22	13.08%	12	15.90%	20
Denver, CO AHS Area	12.48%	21	11.75%	15	13.74%	27	17.00%	13	17.46%	6	8.61%	27	14.11%	23
Fort Worth-Arlington, TX AHS Area	11.28%	28	9.47%	26	14.45%	21	12.32%	25	7.52%	29	11.66%	17	14.46%	22
Indianapolis-Carmel, IN AHS Area	13.89%	13	12.71%	14	16.32%	10	20.63%	9	18.28%	5	14.37%	9	17.81%	14
Kansas City, MO-KS AHS Area	14.64%	12	13.80%	10	16.39%	9	16.61%	14	10.53%	24	15.28%	6	19.63%	7
Los Angeles-Long Beach, CA AHS Area	13.36%	17	10.98%	19	15.49%	19	16.33%	16	14.76%	14	12.03%	15	13.03%	27
Memphis, TN-MS-AR AHS Area	15.31%	6	14.36%	8	17.10%	6	15.64%	17	21.83%	3	18.45%	2	19.46%	8
Milwaukee-Waukesha-West Allis, WI AHS Area	14.86%	11	14.41%	7	15.72%	15	19.76%	10	13.54%	18	15.65%	4	19.18%	10
New Orleans-Metairie-Kenner, LA AHS Area	10.32%	29	8.26%	29	14.33%	23	14.61%	19	8.22%	28	8.28%	29	11.24%	29
Oakland-Fremont-Hayward, CA AHS Area	**13.28%**	**18**	**11.31%**	**18**	**16.16%**	**11**	**14.60%**	**20**	**14.50%**	**15**	**12.87%**	**13**	**13.64%**	**25**
Phoenix-Mesa-Glendale, AZ AHS Area	13.54%	16	10.71%	21	18.82%	3	20.79%	8	10.99%	23	10.89%	20	19.45%	9
Pittsburgh, PA AHS Area	18.37%	2	18.35%	2	18.41%	4	21.45%	6	20.21%	4	14.78%	8	21.69%	5
Portland-Vancouver-Beaverton, OR-WA AHS Area	15.28%	7	13.00%	13	19.46%	2	24.03%	3	15.55%	13	10.48%	22	23.32%	2
Providence, RI AHS Area	14.92%	10	15.76%	6	13.61%	28	19.43%	11	15.80%	12	11.33%	18	17.39%	17
Riverside-San Bernadino-Ontario, CA AHS Area	11.75%	25	9.57%	25	15.59%	18	10.77%	27	12.38%	21	10.75%	21	17.54%	16
Sacramento--Arden-Arcade--Roseville, CA AHS Area	13.12%	20	9.76%	24	17.48%	5	17.13%	12	15.87%	11	12.02%	16	16.74%	19
San Diego-Carlsbad-San Marcos AHS Area	13.18%	19	10.90%	20	15.80%	13	13.59%	22	16.52%	7	9.40%	25	13.64%	26
San Francisco-San Mateo-Redwood City, CA AHS Area	11.54%	26	8.42%	28	14.38%	22	8.63%	28	13.69%	17	10.14%	23	11.76%	28
San Jose-Sunnyvale-Santa Clara, CA AHS Area	12.10%	22	9.41%	27	15.64%	16	7.56%	29	15.97%	10	8.37%	28	14.09%	24
St. Louis, MO-IL AHS Area	15.83%	4	15.86%	5	15.77%	14	24.09%	2	16.30%	9	15.06%	7	18.34%	11
Virginia Beach-Norfolk-Newport News, VA-NC AHS Area	11.82%	23	10.40%	22	14.24%	25	13.11%	23	9.96%	25	8.91%	26	17.75%	15

Housing Units and Households with No Working Carbon Monoxide Detector

	By Tenure						By Household Type							
	Occupied Units		Owner Occupied Units		Renter Occupied Units		Black		Hispanic		Elderly (65+)		Below Poverty	
Metropolitan Area	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Anaheim-Santa Ana, CA AHS Area	72.35%	3	67.02%	4	79.64%	4	74.02%	2	82.13%	2	76.95%	2	76.38%	7
Atlanta-Sandy Springs-Marietta, GA AHS Area	61.73%	13	57.92%	11	69.28%	15	63.88%	15	74.75%	8	59.13%	17	68.81%	17
Birmingham-Hoover, AL AHS Area	69.94%	5	64.46%	7	85.31%	2	76.40%	1	58.20%	22	76.70%	3	77.91%	6
Buffalo-Niagara Falls, NY AHS Area	18.97%	29	14.01%	29	28.69%	29	27.43%	29	33.11%	28	19.06%	29	33.16%	29
Charlotte-Gastonia-Concord, NC-SC AHS Area	41.99%	26	36.85%	25	51.55%	25	38.33%	25	61.00%	21	47.82%	23	55.57%	23
Cincinnati-Middletown, OH-KY-IN AHS Area	56.27%	19	48.12%	19	74.01%	9	57.02%	20	49.11%	25	59.18%	16	71.37%	14
Cleveland-Elyria-Mentor, OH AHS Area	43.71%	24	35.14%	26	62.60%	21	49.61%	22	50.71%	23	42.49%	27	51.46%	26
Columbus, OH AHS Area	51.80%	21	39.19%	23	71.48%	11	69.59%	9	75.79%	7	48.86%	22	74.01%	10
Dallas-Plano-Irving, TX AHS Area	68.83%	6	61.47%	8	80.60%	3	73.56%	3	79.97%	4	60.75%	12	81.70%	2
Denver, CO AHS Area	36.50%	27	32.04%	27	44.18%	27	37.11%	26	50.69%	24	42.76%	25	52.27%	25
Fort Worth-Arlington, TX AHS Area	70.01%	4	67.05%	3	75.20%	7	72.94%	5	73.42%	10	69.34%	6	78.83%	5
Indianapolis-Carmel, IN AHS Area	58.08%	17	52.54%	18	69.48%	14	68.16%	11	65.71%	18	54.78%	19	68.42%	18
Kansas City, MO-KS AHS Area	51.98%	20	43.25%	20	69.79%	13	60.34%	18	67.94%	16	54.00%	20	60.45%	22
Los Angeles-Long Beach, CA AHS Area	72.40%	2	67.91%	2	76.39%	6	68.58%	10	80.96%	3	73.24%	4	80.79%	4
Memphis, TN-MS-AR AHS Area	66.77%	9	61.35%	9	76.99%	5	71.64%	8	68.56%	15	66.35%	8	71.28%	15
Milwaukee-Waukesha-West Allis, WI AHS Area	43.98%	23	40.20%	22	50.79%	26	43.82%	23	44.48%	26	47.60%	24	52.67%	24
New Orleans-Metairie-Kenner, LA AHS Area	68.70%	7	65.32%	6	75.11%	8	73.13%	4	77.74%	5	71.61%	5	72.00%	12
Oakland-Fremont-Hayward, CA AHS Area	**59.33%**	**15**	**56.96%**	**12**	**62.81%**	**20**	**64.31%**	**14**	**67.86%**	**17**	**64.13%**	**10**	**64.65%**	**19**
Phoenix-Mesa-Glendale, AZ AHS Area	80.71%	1	77.67%	1	86.36%	1	72.70%	6	87.19%	1	80.31%	1	90.25%	1
Pittsburgh, PA AHS Area	49.10%	22	41.64%	21	67.07%	18	60.43%	17	63.83%	19	51.95%	21	63.77%	20
Portland-Vancouver-Beaverton, OR-WA AHS Area	59.69%	14	58.99%	10	60.93%	23	39.61%	24	69.66%	13	60.05%	14	70.50%	16
Providence, RI AHS Area	28.60%	28	24.67%	28	34.74%	28	31.53%	28	31.85%	29	34.00%	28	36.93%	28
Riverside-San Bernadino-Ontario, CA AHS Area	68.26%	8	65.35%	5	73.41%	10	71.82%	7	73.98%	9	67.56%	7	76.19%	8
Sacramento--Arden-Arcade--Roseville, CA AHS Area	57.97%	18	54.80%	16	62.08%	22	60.63%	16	61.49%	20	57.61%	18	61.67%	21
San Diego-Carlsbad-San Marcos AHS Area	62.40%	11	56.94%	13	68.64%	17	65.88%	13	69.85%	12	60.28%	13	73.22%	11
San Francisco-San Mateo-Redwood City, CA AHS Area	62.91%	10	56.43%	15	68.85%	16	53.55%	21	72.72%	11	65.95%	9	81.24%	3
San Jose-Sunnyvale-Santa Clara, CA AHS Area	59.08%	16	53.65%	17	66.23%	19	58.14%	19	69.13%	14	61.38%	11	75.03%	9
St. Louis, MO-IL AHS Area	42.44%	25	37.41%	24	55.47%	24	35.28%	27	42.96%	27	42.66%	26	50.83%	27
Virginia Beach-Norfolk-Newport News, VA-NC AHS Area	61.89%	12	56.91%	14	70.37%	12	67.84%	12	77.06%	6	59.85%	15	71.72%	13

Signs of Rodents (Rats, Mice, Other) in Last 12 Months

	By Tenure						By Household Type							
	Occupied Units		Owner Occupied Units		Renter Occupied Units		Black		Hispanic		Elderly (65+)		Below Poverty	
Geography	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Anaheim-Santa Ana, CA AHS Area	5.54%	28	6.32%	27	4.46%	28	2.36%	28	7.06%	23	5.90%	25	8.41%	23
Atlanta-Sandy Springs-Marietta, GA AHS Area	5.70%	27	5.64%	28	5.82%	26	4.87%	26	5.43%	26	6.57%	23	6.64%	28
Birmingham-Hoover, AL AHS Area	12.11%	6	11.90%	11	12.69%	3	14.74%	5	18.03%	2	13.68%	5	20.80%	1
Buffalo-Niagara Falls, NY AHS Area	9.09%	19	9.45%	19	8.39%	15	8.17%	23	15.89%	4	6.01%	24	12.58%	9
Charlotte-Gastonia-Concord, NC-SC AHS Area	10.83%	11	13.70%	6	5.49%	27	8.24%	21	11.83%	11	14.24%	3	10.73%	16
Cincinnati-Middletown, OH-KY-IN AHS Area	10.33%	14	10.93%	14	9.04%	11	8.44%	18	8.93%	20	8.45%	15	12.35%	10
Cleveland-Elyria-Mentor, OH AHS Area	11.36%	10	11.54%	13	10.94%	6	10.79%	13	11.81%	12	6.73%	22	8.74%	22
Columbus, OH AHS Area	9.58%	17	10.12%	16	8.73%	13	8.20%	22	2.11%	29	5.76%	26	10.92%	14
Dallas-Plano-Irving, TX AHS Area	7.15%	25	7.87%	24	6.00%	24	9.86%	15	6.75%	24	9.44%	11	8.94%	21
Denver, CO AHS Area	11.73%	9	13.76%	5	8.23%	17	9.87%	14	9.43%	19	9.13%	12	8.98%	20
Fort Worth-Arlington, TX AHS Area	7.06%	26	7.67%	25	5.95%	25	7.08%	24	6.37%	25	8.11%	17	10.15%	19
Indianapolis-Carmel, IN AHS Area	12.58%	5	12.91%	8	11.89%	4	14.69%	6	9.45%	18	10.12%	8	14.33%	5
Kansas City, MO-KS AHS Area	14.99%	1	16.08%	2	12.75%	2	14.47%	7	14.11%	7	14.39%	2	20.31%	3
Los Angeles-Long Beach, CA AHS Area	7.25%	24	7.61%	26	6.94%	22	5.28%	25	11.04%	15	5.45%	27	8.08%	24
Memphis, TN-MS-AR AHS Area	14.09%	3	15.64%	3	11.18%	5	13.43%	8	18.78%	1	19.98%	1	20.49%	2
Milwaukee-Waukesha-West Allis, WI AHS Area	11.79%	8	12.61%	9	10.28%	8	10.93%	12	10.50%	16	10.48%	7	10.67%	17
New Orleans-Metairie-Kenner, LA AHS Area	10.43%	13	8.03%	23	14.90%	1	15.60%	3	4.45%	27	10.01%	9	13.73%	6
Oakland-Fremont-Hayward, CA AHS Area	**8.97%**	**20**	**10.25%**	**15**	**7.10%**	**21**	**8.44%**	**19**	**11.93%**	**10**	**7.11%**	**19**	**8.06%**	**25**
Phoenix-Mesa-Glendale, AZ AHS Area	2.28%	29	2.27%	29	2.30%	29	0.89%	29	4.22%	28	3.16%	29	3.38%	29
Pittsburgh, PA AHS Area	13.54%	4	15.12%	4	9.72%	9	11.61%	11	14.89%	5	8.60%	14	11.92%	12
Portland-Vancouver-Beaverton, OR-WA AHS Area	10.63%	12	11.92%	10	8.30%	16	12.34%	9	11.43%	13	8.19%	16	10.86%	15
Providence, RI AHS Area	14.92%	2	18.74%	1	8.85%	12	15.61%	2	16.30%	3	13.93%	4	13.34%	7
Riverside-San Bernadino-Ontario, CA AHS Area	9.46%	18	9.45%	18	9.47%	10	8.33%	20	8.83%	21	4.67%	28	14.49%	4
Sacramento--Arden-Arcade--Roseville, CA AHS Area	10.18%	15	9.85%	17	10.59%	7	15.32%	4	9.92%	17	8.77%	13	10.49%	18
San Diego-Carlsbad-San Marcos AHS Area	9.75%	16	11.58%	12	7.65%	19	3.48%	27	12.10%	9	9.67%	10	11.97%	11
San Francisco-San Mateo-Redwood City, CA AHS Area	7.87%	23	9.15%	20	6.71%	23	9.39%	16	13.27%	8	6.86%	21	7.93%	26
San Jose-Sunnyvale-Santa Clara, CA AHS Area	8.03%	22	8.62%	22	7.21%	20	20.35%	1	8.73%	22	7.41%	18	6.97%	27
St. Louis, MO-IL AHS Area	11.79%	7	13.04%	7	8.53%	14	12.26%	10	14.81%	6	11.63%	6	13.24%	8
Virginia Beach-Norfolk-Newport News, VA-NC AHS Area	8.49%	21	8.96%	21	7.72%	18	9.14%	17	11.26%	14	7.02%	20	11.54%	13

Signs of Cockroaches in Last 12 Months

	By Tenure						By Household Type							
	Occupied Units		Owner Occupied Units		Renter Occupied Units		Black		Hispanic		Elderly (65+)		Below Poverty	
Geography	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Anaheim-Santa Ana, CA AHS Area	9.98%	12	5.03%	12	16.72%	12	9.45%	18	24.17%	9	6.67%	12	20.87%	12
Atlanta-Sandy Springs-Marietta, GA AHS Area	27.20%	3	23.04%	3	35.40%	3	26.44%	5	33.97%	5	19.72%	5	37.79%	1
Birmingham-Hoover, AL AHS Area	29.87%	2	25.13%	2	43.16%	1	37.79%	1	43.44%	1	26.81%	2	37.25%	2
Buffalo-Niagara Falls, NY AHS Area	1.49%	28	0.10%	28	4.22%	27	3.39%	28	12.58%	16	0.28%	29	7.37%	25
Charlotte-Gastonia-Concord, NC-SC AHS Area	17.13%	9	14.23%	8	22.58%	9	19.98%	8	29.76%	6	13.99%	6	23.90%	10
Cincinnati-Middletown, OH-KY-IN AHS Area	6.18%	16	2.29%	17	14.61%	15	16.32%	11	4.91%	26	3.74%	15	13.86%	17
Cleveland-Elyria-Mentor, OH AHS Area	3.00%	24	0.66%	23	8.19%	21	9.25%	19	9.16%	21	1.44%	23	9.71%	23
Columbus, OH AHS Area	3.01%	23	1.22%	21	5.85%	25	11.00%	17	4.21%	27	0.93%	28	8.50%	24
Dallas-Plano-Irving, TX AHS Area	25.00%	5	19.60%	5	33.61%	4	27.89%	4	34.25%	4	22.62%	4	30.11%	5
Denver, CO AHS Area	3.11%	22	0.13%	27	8.25%	20	5.30%	26	11.66%	17	1.22%	25	17.45%	14
Fort Worth-Arlington, TX AHS Area	17.76%	8	14.46%	7	23.57%	8	21.05%	7	22.69%	10	12.50%	7	20.88%	11
Indianapolis-Carmel, IN AHS Area	4.17%	20	2.22%	18	8.18%	22	5.94%	25	8.83%	22	2.29%	20	6.49%	27
Kansas City, MO-KS AHS Area	7.48%	14	3.98%	14	14.62%	14	15.43%	14	12.92%	15	5.13%	13	16.41%	15
Los Angeles-Long Beach, CA AHS Area	17.83%	7	8.32%	11	26.28%	7	18.53%	9	26.90%	8	11.32%	9	29.44%	6
Memphis, TN-MS-AR AHS Area	25.72%	4	22.50%	4	31.74%	5	31.76%	3	36.24%	2	25.81%	3	37.04%	3
Milwaukee-Waukesha-West Allis, WI AHS Area	2.61%	26	0.27%	25	6.83%	24	8.50%	21	7.18%	24	1.92%	21	9.99%	22
New Orleans-Metairie-Kenner, LA AHS Area	35.64%	1	34.91%	1	37.02%	2	32.63%	2	34.59%	3	33.30%	1	31.57%	4
Oakland-Fremont-Hayward, CA AHS Area	**3.38%**	**21**	**2.04%**	**19**	**5.34%**	**26**	**6.27%**	**24**	**5.77%**	**25**	**1.62%**	**22**	**7.33%**	**26**
Phoenix-Mesa-Glendale, AZ AHS Area	20.34%	6	16.34%	6	27.77%	6	25.00%	6	28.55%	7	11.72%	8	28.84%	7
Pittsburgh, PA AHS Area	1.59%	27	0.71%	22	3.71%	28	4.38%	27	0.00%	29	1.37%	24	4.15%	28
Portland-Vancouver-Beaverton, OR-WA AHS Area	0.86%	29	0.05%	29	2.36%	29	1.95%	29	1.22%	28	1.14%	27	1.81%	29
Providence, RI AHS Area	2.87%	25	0.25%	26	6.98%	23	13.06%	16	7.65%	23	1.19%	26	10.38%	20
Riverside-San Bernadino-Ontario, CA AHS Area	12.68%	11	8.55%	10	19.97%	11	16.01%	12	17.60%	11	9.15%	11	27.00%	8
Sacramento--Arden-Arcade--Roseville, CA AHS Area	4.86%	17	1.33%	20	9.44%	17	8.90%	20	10.66%	20	3.07%	18	14.14%	16
San Diego-Carlsbad-San Marcos AHS Area	8.74%	13	3.02%	16	15.27%	13	15.64%	13	14.49%	14	3.85%	14	17.61%	13
San Francisco-San Mateo-Redwood City, CA AHS Area	4.60%	19	0.52%	24	8.30%	19	8.38%	22	10.83%	18	2.86%	19	13.08%	18
San Jose-Sunnyvale-Santa Clara, CA AHS Area	7.39%	15	4.54%	13	11.14%	16	13.37%	15	15.05%	13	3.14%	17	12.13%	19
St. Louis, MO-IL AHS Area	4.85%	18	3.46%	15	8.46%	18	7.01%	23	10.74%	19	3.38%	16	10.00%	21
Virginia Beach-Norfolk-Newport News, VA-NC AHS Are	14.31%	10	10.55%	9	20.71%	10	18.33%	10	15.58%	12	11.25%	10	26.70%	9

Broken Plaster or Peeling Paint (Interior)

	By Tenure						By Household Type							
	Occupied Units		Owner Occupied Units		Renter Occupied Units		Black		Hispanic		Elderly (65+)		Below Poverty	
Geography	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Anaheim-Santa Ana, CA AHS Area	1.51%	22	0.93%	24	2.31%	18	0.79%	27	3.00%	6	0.15%	28	3.56%	13
Atlanta-Sandy Springs-Marietta, GA AHS Area	1.30%	26	0.80%	26	2.30%	21	2.11%	18	2.37%	9	1.02%	13	2.95%	17
Birmingham-Hoover, AL AHS Area	2.22%	8	1.58%	8	3.99%	5	4.70%	4	3.28%	4	1.75%	6	5.29%	5
Buffalo-Niagara Falls, NY AHS Area	3.66%	2	3.08%	2	4.73%	3	3.54%	10	0.66%	26	2.07%	4	7.75%	1
Charlotte-Gastonia-Concord, NC-SC AHS Area	1.62%	18	1.04%	23	2.70%	14	1.62%	21	2.96%	8	0.50%	23	1.01%	29
Cincinnati-Middletown, OH-KY-IN AHS Area	2.49%	7	1.77%	5	4.05%	4	4.74%	3	0.00%	29	1.15%	11	4.84%	9
Cleveland-Elyria-Mentor, OH AHS Area	1.74%	14	1.49%	9	2.31%	19	3.73%	9	0.81%	24	0.48%	24	2.07%	22
Columbus, OH AHS Area	1.87%	12	1.27%	16	2.81%	13	3.28%	11	2.11%	12	0.42%	26	4.35%	11
Dallas-Plano-Irving, TX AHS Area	1.90%	10	1.60%	7	2.37%	17	2.21%	17	2.96%	7	2.63%	2	5.48%	4
Denver, CO AHS Area	1.67%	16	1.20%	18	2.47%	15	0.55%	29	1.27%	19	0.87%	17	1.37%	27
Fort Worth-Arlington, TX AHS Area	1.28%	27	0.81%	25	2.10%	22	1.07%	25	1.40%	18	0.59%	22	1.63%	24
Indianapolis-Carmel, IN AHS Area	1.88%	11	1.41%	11	2.85%	12	4.37%	5	0.21%	28	0.73%	18	4.48%	10
Kansas City, MO-KS AHS Area	1.76%	13	1.11%	21	3.10%	11	3.97%	8	0.72%	25	0.31%	27	3.91%	12
Los Angeles-Long Beach, CA AHS Area	2.67%	5	1.94%	4	3.32%	9	2.57%	14	3.02%	5	1.47%	9	2.80%	18
Memphis, TN-MS-AR AHS Area	3.25%	3	2.90%	3	3.95%	7	4.28%	6	0.87%	23	2.39%	3	6.45%	2
Milwaukee-Waukesha-West Allis, WI AHS Area	2.09%	9	1.28%	15	3.55%	8	2.87%	13	6.35%	1	1.34%	10	2.95%	16
New Orleans-Metairie-Kenner, LA AHS Area	1.51%	21	1.48%	10	1.63%	27	1.61%	23	0.34%	27	1.06%	12	2.05%	23
Oakland-Fremont-Hayward, CA AHS Area	**1.66%**	**17**	**1.23%**	**17**	**2.30%**	**20**	**4.22%**	**7**	**1.15%**	**20**	**1.67%**	**7**	**5.04%**	**7**
Phoenix-Mesa-Glendale, AZ AHS Area	1.22%	28	0.75%	27	2.10%	23	2.04%	19	2.32%	10	0.12%	29	3.38%	14
Pittsburgh, PA AHS Area	3.96%	1	3.29%	1	5.60%	1	8.29%	1	1.60%	15	2.89%	1	5.62%	3
Portland-Vancouver-Beaverton, OR-WA AHS Area	1.70%	15	1.32%	13	2.40%	16	1.30%	24	0.91%	22	0.97%	15	3.09%	15
Providence, RI AHS Area	1.59%	19	0.63%	29	3.14%	10	1.59%	22	3.70%	2	0.59%	21	1.62%	25
Riverside-San Bernadino-Ontario, CA AHS Area	1.46%	23	1.34%	12	1.68%	26	2.34%	16	1.97%	14	1.00%	14	2.68%	20
Sacramento--Arden-Arcade--Roseville, CA AHS Area	0.74%	29	0.63%	28	0.88%	29	0.99%	26	1.57%	16	0.44%	25	1.04%	28
San Diego-Carlsbad-San Marcos AHS Area	1.56%	20	1.18%	19	2.00%	24	0.63%	28	2.08%	13	1.93%	5	1.55%	26
San Francisco-San Mateo-Redwood City, CA AHS Area	2.58%	6	1.05%	22	3.98%	6	5.08%	2	0.96%	21	0.66%	19	5.02%	8
San Jose-Sunnyvale-Santa Clara, CA AHS Area	1.43%	24	1.30%	14	1.60%	28	1.74%	20	3.62%	3	0.61%	20	2.65%	21
St. Louis, MO-IL AHS Area	1.38%	25	1.18%	20	1.90%	25	2.43%	15	1.48%	17	0.87%	16	2.69%	19
Virginia Beach-Norfolk-Newport News, VA-NC AHS Area	2.93%	4	1.71%	6	5.02%	2	3.05%	12	2.16%	11	1.66%	8	5.05%	6

Heating Problems: Uncomfortably Cold for 24 Hours or More

	By Tenure						By Household Type							
	Occupied Units		Owner Occupied Units		Renter Occupied Units		Black		Hispanic		Elderly (65+)		Below Poverty	
Geography	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Anaheim-Santa Ana, CA AHS Area	3.53%	28	2.43%	29	5.04%	28	2.36%	28	6.72%	24	3.36%	23	4.37%	29
Atlanta-Sandy Springs-Marietta, GA AHS Area	7.92%	16	6.83%	15	10.07%	11	11.24%	13	8.80%	19	3.81%	22	12.39%	8
Birmingham-Hoover, AL AHS Area	8.18%	13	8.86%	7	6.26%	26	9.04%	16	11.48%	8	6.46%	10	15.98%	3
Buffalo-Niagara Falls, NY AHS Area	6.77%	22	5.56%	21	9.14%	14	8.63%	18	4.64%	27	2.91%	25	13.60%	7
Charlotte-Gastonia-Concord, NC-SC AHS Area	5.98%	24	5.80%	20	6.31%	25	5.49%	27	7.02%	23	7.54%	7	8.78%	22
Cincinnati-Middletown, OH-KY-IN AHS Area	8.99%	11	9.09%	6	8.77%	16	16.60%	1	11.61%	7	6.04%	11	11.44%	12
Cleveland-Elyria-Mentor, OH AHS Area	9.32%	8	8.72%	9	10.61%	10	15.06%	5	11.81%	6	8.53%	6	11.20%	13
Columbus, OH AHS Area	11.02%	1	11.24%	1	10.64%	8	11.39%	12	9.47%	18	10.08%	2	12.37%	9
Dallas-Plano-Irving, TX AHS Area	9.47%	6	8.75%	8	10.63%	9	8.69%	17	10.70%	11	5.59%	12	11.73%	11
Denver, CO AHS Area	9.18%	10	6.34%	18	14.07%	1	13.89%	9	13.35%	4	5.06%	16	16.85%	2
Fort Worth-Arlington, TX AHS Area	8.05%	15	7.98%	12	8.15%	19	7.66%	21	5.86%	25	7.26%	8	6.70%	27
Indianapolis-Carmel, IN AHS Area	8.11%	14	8.36%	11	7.59%	23	14.13%	8	9.65%	16	4.00%	21	9.85%	17
Kansas City, MO-KS AHS Area	6.88%	21	6.74%	16	7.16%	24	7.61%	22	7.42%	21	4.34%	19	7.91%	24
Los Angeles-Long Beach, CA AHS Area	8.76%	12	7.86%	13	9.58%	13	9.82%	15	10.48%	13	6.64%	9	9.72%	19
Memphis, TN-MS-AR AHS Area	10.11%	4	9.70%	4	10.88%	7	14.66%	6	10.92%	9	9.27%	4	11.13%	14
Milwaukee-Waukesha-West Allis, WI AHS Area	7.42%	17	5.26%	24	11.41%	4	14.13%	7	18.23%	1	5.18%	15	14.53%	4
New Orleans-Metairie-Kenner, LA AHS Area	6.31%	23	5.26%	23	8.23%	18	8.58%	19	4.11%	28	4.91%	17	10.70%	16
Oakland-Fremont-Hayward, CA AHS Area	**10.74%**	**2**	**10.50%**	**2**	**11.09%**	**5**	**15.39%**	**4**	**10.39%**	**15**	**9.27%**	**5**	**14.47%**	**5**
Phoenix-Mesa-Glendale, AZ AHS Area	3.27%	29	2.87%	28	4.04%	29	1.91%	29	5.51%	26	1.58%	29	5.07%	28
Pittsburgh, PA AHS Area	10.65%	3	9.76%	3	12.77%	2	16.00%	2	13.30%	5	10.08%	1	12.31%	10
Portland-Vancouver-Beaverton, OR-WA AHS Area	10.01%	5	9.46%	5	10.99%	6	5.84%	25	10.67%	12	9.39%	3	20.02%	1
Providence, RI AHS Area	6.93%	19	5.56%	22	9.09%	15	8.28%	20	14.57%	3	2.37%	27	10.92%	15
Riverside-San Bernadino-Ontario, CA AHS Area	6.89%	20	5.91%	19	8.63%	17	5.99%	23	8.28%	20	5.31%	14	9.51%	20
Sacramento--Arden-Arcade--Roseville, CA AHS Area	7.32%	18	6.71%	17	8.12%	20	12.03%	11	9.59%	17	4.26%	20	8.76%	23
San Diego-Carlsbad-San Marcos AHS Area	5.87%	25	4.31%	26	7.64%	22	5.53%	26	7.40%	22	2.19%	28	9.80%	18
San Francisco-San Mateo-Redwood City, CA AHS Area	9.23%	9	8.57%	10	9.84%	12	13.45%	10	10.40%	14	5.37%	13	9.11%	21
San Jose-Sunnyvale-Santa Clara, CA AHS Area	9.42%	7	7.44%	14	12.07%	3	15.70%	3	15.90%	2	4.45%	18	13.81%	6
St. Louis, MO-IL AHS Area	5.48%	27	5.23%	25	6.15%	27	9.83%	14	4.07%	29	3.31%	24	7.66%	25
Virginia Beach-Norfolk-Newport News, VA-NC AHS Area	5.57%	26	4.15%	27	7.98%	21	5.94%	24	10.82%	10	2.49%	26	7.36%	26

Appendix 2: Word Frequency Counts for Occupied Blight Complaints in Oakland, 2003 to July 2013

Descriptive Terms

TERM(S)	FREQUENCY
LEAKING; LEAKS; LEAK; LEAKAGE	1,416
DAMAGED; DAMAGE	1,022
VACANT	905
UNAPPROVED	749
ACCUMULATION	740
ABANDONED	682
BLIGHTED; BLIGHT	652
ILLEGAL	551
UNSECURED; UNSECURE	344
PEELING	325
DILAPIDATED	293
HAZARD; HAZARDOUS	246
INFESTATION; INFESTED	220
OVERFLOWING	198
ROTTED; ROT; ROTTING; ROTTEN	159
ENCROACHING; ENCROACHMENT	155
CRACKS; CRACKED	129
UNREGISTERED	100
UNSAFE	85
FLOODING; FLOODED	73
SUBSTANDARD	61
INADEQUATE	58
FAULTY	58
UNSTABLE	53
DEFECTIVE	37
DRYROT	24
SPILLING	22

Sensory Nuisance/Physical Hazard

TERM(S)	FREQUENCY
FECES	168
ODOR	99
OIL	94
NOISE	74
SMELL	60
DRUG	49
SMELLS	32
URINE	23
STENCH	20

Fire

TERM(S)	FREQUENCY
FIRE	502
BURNED	36

Mold

TERM(S)	FREQUENCY
MOLD	623
MILDEW	250

People

TERM(S)	FREQUENCY
HOMELESS	60
SQUATTERS	48
VAGRANTS	23

Garbage/Blight Related

TERM(S)	FREQUENCY
TRASH	11,028
DEBRIS	9,364
GARBAGE	1,979
JUNK	423
GRAFFITI	344
WASTE	156
RUBBISH	82
DUMPING	76
LITTER	61

Vegetation

TERM(S)	FREQUENCY
OVERGROWN; OVERGROWTH	8,691
VEGETATION	5,777
WEEDS	1,422

Vehicles

TERM(S)	FREQUENCY
VEHICLE; VEHICLES	2,498
CARS; CAR	1,072
TRUCK; TRUCKS	200
TRAILER	173
CAMPER	92
VAN	54

Furniture

TERM(S)	FREQUENCY
FURNITURE; FURNITURES	835
MATTRESS; MATTRESSES	410
COUCH; COUCHES	108
SOFA	88
CHAIRS; CHAIR	48
BED	42

Vectors

TERM(S)	FREQUENCY
RATS; RAT	187
RODENT; RODENTS	150
ROACH; ROACHES	142
VECTOR	94
MICE	65
INSECT; INSECTS	58
BUGS	20

Animals

TERM(S)	FREQUENCY
DOG; DOGS	169
CHICKENS; CHICKEN	86
ROOSTERS; ROOSTER	80
CAT	21

Locational/Room

TERM(S)	FREQUENCY
DRIVEWAY	1,240
GARAGE	1,224
FENCE	1,117
SIDEWALK	901
BATHROOM; BATHRM	623
LAWN	579
KITCHEN	561
EXTERIOR	364
PORCH	354
BASEMENT	332
DECK	241
BEDROOM; BEDROOMS	230
PATIO	78
BALCONY	64
LIVINGROOM	23

Appliances

TERM(S)	FREQUENCY
APPLIANCES; APPLIANCE	402
STOVE	176
REFRIGERATOR	161
LAUNDRY	111
DRYER	40
WASHER	39

Utility Related

TERM(S)	FREQUENCY
HEATER; HEAT; HEATING; HEATERS	1,204
ELECTRICAL; ELECTRICITY; POWER; ELECTRIC	860
SEWER	231
WIRING; WIRES	194
SEWAGE	173
GAS	164
FURNACE	75
PGE	35

Specific Housing Items

TERM(S)	FREQUENCY
WINDOWS; WINDOW	1,667
WALL; WALLS	891
DOOR; DOORS	680
PLUMBING	602
ROOF; ROOFING	574
CEILING	550
STAIRS; STAIR; STAIRWAY	526
PAINT	522
FLOOR; FLOORING	335
TOILET; TOILETS	319
SINK	289
CARPET; CARPETS	208
FOUNDATION	117
SHOWER	113
LIGHTS; LIGHTING	96
BATH	94
CABINETS; CABINET	87
CLOSET	61
BATHTUB	54
STEPS	48
RAILING	43
HALLWAY	42
ELEVATOR	41
FAUCET	39
GUTTER	33
INSULATION	26
ATTIC	26
SHEETROCK	26
TILES	26
HANDRAIL	25
CHIMNEY	24
VENTILATION	24
GUTTERS	23
EXHAUST	23

Attachment F: Full Descriptions of PRI Policy Alternative Scenarios

Scenario 1: 10% of all rental units in zip codes with BLL above 7%: 94601, 94606, 94605, 94607

Scenario 1 assumes that a pilot PRI program would inspect 10 percent of all rental units in zip codes with reported BLL above 7 percent. These zip codes would include 94601, 94606, 94605, and 94607. Staff estimates that there are approximately 38,000 rental units in these zip codes, roughly 40 percent of all rental units in Oakland. Based upon this model, staff estimates a program cost of $1.6 million or $423 per unit. Table 1 below summarized these costs associated with Scenario 1.

Table 1. Scenario 1 Estimated Program Costs

Position	**FTE**	**Cost (FY17/18)**	**Total**	Per Unit
Estimated Units				3,800
Direct Staffing				
Project Manager	1.0	$ 210,814	$ 210,814	
Special Combination Inspector	2.8	$ 135,836	$ 380,341	
Senior Special Combination Inspector	1.0	$ 154,959	$ 154,959	
Direct Staffing Sub-Total	*4.8*	*$ 501,609*	*$ 746,114*	*$ 196*
Indirect Staffing				
Administrative Assistant I	1.0	$ 85,281	$ 42,641	
Account Clerk III	1.0	$ 95,140	$ 95,140	
City Attorney	1.0	$ 360,456	$ 108,137	
Paralegal	1.0	$ 121,484	$ 36,445	
Indirect Staffing Sub-Total	*4.0*	*$ 662,361*	*$ 282,363*	*$ 74*
Total Staffing Costs			**$ 1,028,476**	**$ 271**
Outreach & Education				
Community Health Workers	3.8	$ 100,000	$ 380,000	
Outreach Coordination		$ 50,000	$ 50,000	
Outreach & Education		$ 50,000	$ 50,000	
Tenant Outreach & Education	7.0	$ 200,000	*$ 480,000*	*$ 126*
Non-Staffing Costs				
Supplies, Equipment		-	$ 15,800	
Software & Communication		-	$ 50,000	
Computers		-	$ 19,750	
Misc.		-	$ 15,000	
Non-Staffing Costs Sub-Total			*$ 100,550*	*$ 26*
TOTAL ESTIMATED COSTS OF PROGRAM			**$ 1,609,026**	**$ 423**

Scenario 2: 10% of all rental units in zip Codes with BLL above 6%: 94601, 94606, 94605, 94607, 94621, 94608, 94538, 94603

Scenario 2 assumes that a pilot PRI program would inspect 10 percent of all rental units in zip codes with reported BLL above 6 percent. These zip codes would include 94601, 94606, 94605, 94607, 94621, 94609, 94538, and 94603. Staff estimates that there are approximately 70,000 rental units in these zip codes, roughly 74 percent of all rental units in Oakland. Based upon this model, staff estimates a program cost of $2.4 million or $341 per unit. Table 2 below summarized these costs associated with Scenario 2.

Table 2. Scenario 2 Estimated Program Costs

Position	**FTE**	**Cost (FY17/18)**	**Total**	Per Unit
Estimated Units				7,000
Direct Staffing				
Project Manager	1.0	$ 210,814	$ 210,814	
Special Combination Inspector	5.0	$ 135,836	$ 679,180	
Senior Special Combination Inspector	2.0	$ 154,959	$ 309,918	
Direct Staffing Sub-Total	*8.0*	*$ 501,609*	*$ 1,199,912*	*$ 171*
Indirect Staffing				
Administrative Assistant I	1.0	$ 85,281	$ 42,641	
Account Clerk III	1.0	$ 95,140	$ 95,140	
City Attorney	1.0	$ 360,456	$ 108,137	
Paralegal	1.0	$ 121,484	$ 36,445	
Indirect Staffing Sub-Total	*4.0*	*$ 662,361*	*$ 282,363*	*$ 40*
Total Staffing Costs			**$ 1,482,275**	**$ 212**
Outreach & Education				
Community Health Workers	7.0	$ 100,000	$ 700,000	
Outreach Coordination		$ 50,000	$ 50,000	
Outreach & Education		$ 50,000	$ 50,000	
Tenant Outreach & Education	7.0	$ 200,000	*$ 800,000*	*$ 114*
Non-Staffing Costs				
Supplies, Equipment		-	$ 19,000	
Software & Communication		-	$ 50,000	
Computers		-	$ 23,750	
Misc.		-	$ 15,000	
Non-Staffing Costs Sub-Total			*$ 107,750*	*$ 15*
TOTAL ESTIMATED COSTS OF PROGRAM			**$ 2,390,025**	**$ 341**

Scenario 3: 10% of buildings with 9 or fewer rental units in Zip Codes with BLL above 7%: 94601, 94606, 94605, 94607

Scenario 3 assumes that a pilot PRI program would inspect 10 percent of rental units in buildings with nine (9) or fewer rental units in zip codes with reported BLL above 6 percent. These zip codes would include 94601, 94606, 94605, and 94607. Staff estimates that there are approximately 31,000 rental units in these zip codes, roughly 33 percent of all rental units in Oakland. Based upon this model, staff estimates a program cost of $1.44 million or $465 per unit. Table 3 below summarized these costs associated with Scenario 3.

Table 3. Scenario 3 Estimated Program Costs

Position	**FTE**	**Cost (FY17/18)**	**Total**	Per Unit
Estimated Units				3,100
Direct Staffing				
Project Manager	1.0	$ 210,814	$ 210,814	
Special Combination Inspector	2.1	$ 135,836	$ 285,256	
Senior Special Combination Inspector	1.0	$ 154,959	$ 154,959	
Direct Staffing Sub-Total	*4.1*	*$ 501,609*	*$ 651,029*	*$ 210*
Indirect Staffing				
Administrative Assistant I	1.0	$ 85,281	$ 42,641	
Account Clerk III	1.0	$ 95,140	$ 95,140	
City Attorney	1.0	$ 360,456	$ 108,137	
Paralegal	1.0	$ 121,484	$ 36,445	
Indirect Staffing Sub-Total	*4.0*	*$ 662,361*	*$ 282,363*	*$ 91*
Total Staffing Costs			**$ 933,391**	**$ 301**
Outreach & Education				
Community Health Workers	3.1	$ 100,000	$ 310,000	
Outreach Coordination		$ 50,000	$ 50,000	
Outreach & Education		$ 50,000	$ 50,000	
Tenant Outreach & Education	7.0	$ 200,000	*$ 410,000*	*$ 132*
Non-Staffing Costs				
Supplies, Equipment		-	$ 15,100	
Software & Communication		-	$ 50,000	
Computers		-	$ 18,875	
Misc.		-	$ 15,000	
Non-Staffing Costs Sub-Total			*$ 98,975*	*$ 32*
TOTAL ESTIMATED COSTS OF PROGRAM			**$ 1,442,366**	**$ 465**

Scenario 4: 10% of buildings with 9 or fewer rental units in Zip Codes with BLL above 6%: 94601, 94606, 94605, 94607, 94621, 94608, 94538, 94603

Scenario 4 assumes that a pilot PRI program would inspect 10 percent of rental units in buildings with nine (9) or fewer rental units in zip codes with reported BLL above 6 percent. These zip codes would include 94601, 94606, 94605, 94607, 94621, 94609, 94538, and 94603. Staff estimates that there are approximately 37,000 rental units in these zip codes, roughly 39 percent of all rental units in Oakland. Based upon this model, staff estimates a program cost of $1.6 million or $428 per unit. Table X below summarized these costs associated with Scenario 4.

Table 4. Scenario 4 Estimated Program Costs

Position	FTE	Cost (FY17/18)	Total	Per Unit
Estimated Units				3,700
Direct Staffing				
Project Manager	1.0	$ 210,814	$ 210,814	
Special Combination Inspector	2.7	$ 135,836	$ 366,757	
Senior Special Combination Inspector	1.0	$ 154,959	$ 154,959	
Direct Staffing Sub-Total	*4.7*	*$ 501,609*	*$ 732,530*	*$ 198*
Indirect Staffing				
Administrative Assistant I	1.0	$ 85,281	$ 42,641	
Account Clerk III	1.0	$ 95,140	$ 95,140	
City Attorney	1.0	$ 360,456	$ 108,137	
Paralegal	1.0	$ 121,484	$ 36,445	
Indirect Staffing Sub-Total	*4.0*	*$ 662,361*	*$ 282,363*	*$ 76*
Total Staffing Costs			**$ 1,014,893**	**$ 274**
Outreach & Education				
Community Health Workers	3.7	$ 100,000	$ 370,000	
Outreach Coordination		$ 50,000	$ 50,000	
Outreach & Education		$ 50,000	$ 50,000	
Tenant Outreach & Education	7.0	$ 200,000	*$ 470,000*	*$ 127*
Non-Staffing Costs				
Supplies, Equipment		-	$ 15,700	
Software & Communication		-	$ 50,000	
Computers		-	$ 19,625	
Misc.		-	$ 15,000	
Non-Staffing Costs Sub-Total			*$ 100,325*	*$ 27*
TOTAL ESTIMATED COSTS OF PROGRAM			**$ 1,585,218**	**$ 428**

Attachment G

UC Berkeley - Goldman School of Public Policy

Proactive Rental Inspections in Oakland, California

A Benefit-Cost Analysis

Michael Burdick
Lucia Del Puppo
Ethan Guy
Carlos Villarreal
December 16, 2014

Table of Contents

Introduction

Proactive Rental Inspection (PRI) programs aim to improve health and education outcomes among renters by mandating the inspection of rental housing on a proactive rather than reactive basis. Negative health outcomes, in particular asthma, are associated with poor quality housing. The intent of this analysis is to compare the status quo alternative in which rental units are inspected on a reactive basis to the adoption of a PRI program to determine the relationship between the costs and benefits of the adoption of such a program. The jurisdictional level of standing in this analysis is the City of Oakland, California. This includes the renters, landlords, citizens, and city government of Oakland.

The costs in this analysis include the cost of staff time and resources, maintenance costs, tenant relocation costs, and the cost of a tenant having to move away from their optimal quality-quantity bundle with regards to housing size and quality. The benefits are quantified by the improvements in health. These are measured in terms of Quality Adjusted Life Years (QALY) and in terms of avoided costs of emergency room visits and hospitalizations.

The anticipated net benefits of the PRI program are $49.5 million relative to the status quo. These results are dependent on our estimates of the sustainability of health benefits over time, the effectiveness of the inspection program in eliminating mold from homes, and our assumption that single-family homes are covered by Oakland's rent control ordinance.

The results were further analyzed using a Monte Carlo simulation and partial sensitivity analysis. For the partial sensitivity analysis we used a social discount rate ranging from three to seven percent (3.0% - 7.0%). We ran the Monte Carlo Simulation over 1,000 trials and found a 96.29-percent likelihood of positive net benefits. The main takeaway of this analysis is the relative importance of accurately quantifying health impacts in determining the net benefits of this program. The health benefits that we quantify accrue to a group of 330 people over 20 years. Because these impacts do not represent fiscal line items but rather broader social benefits that target a relatively small group of people, it is the City of Oakland's discretion to determine the importance of these impacts on decision making regarding potential PRI program implementation. The City should analyze other alternatives that may be better targeted, and could potentially deliver the same or greater benefits at a lower cost.

The results of this analysis are in favor of enacting the program, although further policy analysis is necessary before a policy recommendation can be made. While actual costs to society and the City of Oakland are anticipated to be higher than what is analyzed, the significant projected net benefits due to improvements in health outcomes far exceed any increase in costs. **Table E.1** summarizes the estimated net benefits of the program over a 20-year time horizon.

Table E.1: Net Benefit Summary

		Preferred Alternative
Costs		
Administrative Costs	$	2,219,129
Maintenance Costs		12,039,207
Relocation Costs		224,685
Suboptimal Bundle		1,345,929
Total - Costs	$	15,828,950
Benefits		
Asthma Reductions	$	168,372
Asthma QALYs		64,256,796
Total - Benefits	$	64,425,168
Net Benefits	$	48,596,218

Sources: Appendix Tables A.1 through A.7.

Policy Background and Alternatives

Proactive Rental Inspection (PRI) programs attempt to improve health and education outcomes among renters by mandating the inspection of rental housing on a proactive rather than reactive basis. Prior analysis has shown that negative health outcomes, particularly increased asthma rates can be linked to issues stemming from poor quality of housing. By inspecting the rental housing stock on a regular basis, and providing harsh penalties to landlords who do not remedy any infractions, PRI programs intend to improve housing quality and health outcomes for renters and their families. For the purposes of this analysis we are comparing the following two alternatives:

Status Quo Alternative

Rental units will only be inspected on a reactive basis. Inspections are only performed if requested by a tenant or landlord, or if required due as a result of capital improvements, utility work, or new construction.

PRI Alternative

The PRI program alternative to be analyzed will contain a combination of features currently found in the following PRI Programs: City of Sacramento Residential Housing Inspection Program (RHIP) and the City of Los Angeles' Systematic Code Enforcement Program (SCEP). The proposed City of Oakland PRI program will function as follows:

- At program inception, all rental units are required to register and receive an initial inspection through the City of Oakland Building Inspection Division. As new units are added to the rental housing market, they will receive an initial inspection upon unit registration. An initial inspection fee will be charged to recover the time and materials used to inspect the unit.

    - Landlords are allowed to pass through the full cost of the inspection fee in rent increases to tenants.

- All units must be inspected annually, however, after a unit's initial inspection, subsequent inspections will be performed by the Landlord through participation in a "self-certification" program.
- The Building Inspection Division will inspect a certain percentage of units participating in the "self-certification" program annually, so that all units receive a city inspection every ten years at minimum. If they fail a random inspection, landlords are fined and are not eligible to self-inspect for at least one year.
- The penalties for inadequate conditions will be modeled on Los Angeles SCEP, where the cost of the penalty for failing an inspection exceeds the cost of the capital improvements needed to remedy the code infraction. This penalty cannot be passed through to the tenant.
- Tenant protections based upon Los Angeles SCEP will also be included. These protections include financial assistance provided by the landlord if a tenant is displaced as a result of a failed inspection.

This policy will be implemented as part of the Oakland Sustainable Neighborhood Initiative (OSNI). This initiative will focus on the International Corridor of Oakland, California. The Strategic Initiatives Divisions within the City of Oakland Department of Housing and Community Development will be the agency responsible for program implementation.

Standing

Our jurisdictional level of standing is the City of Oakland. This includes people that reside and own property in Oakland.

Predicting and Monetizing Impacts

Predicting and Monetizing Costs

This section describes the costs of the impacts of the PRI program used for this analysis. These impacts include: the administrative costs, property maintenance costs, tenant relocation, and the cost of tenants having to accept a sub-optimal housing bundle.

Administrative Costs

Overview:

The implementation of this policy will require the use of additional staff time and department resources to meet the increased demand for housing inspections. The costs of this increase in staffing are equal to the wage paid to inspectors and the budgetary cost of other resources used in inspections (i.e. administrative costs).

Methodology:

Staff time and administrative costs are determined by a calculation based upon the number of units in the program area, the number of units inspected per inspector per year, and the costs of code enforcement staff time needed to conduct the inspections. The number of units in the program area is estimated based upon figures provided by the City of Oakland.

The number of units inspected per inspector per year is based upon the frequency of units inspected by City of Sacramento RHIP inspectors. Finally, the cost of staff time is based on the estimated salaries of code enforcement inspectors in Oakland's most recent budget. This cost formula estimates the costs to the city including employee salary, benefits, and administrative overhead. We assume an average cost per unit for all inspections without differentiating between the cost of an initial inspection and subsequent auditing inspections.

Mathematical Explanation:

Equation 1: *Units per Inspector per Year= (Number of Units Inspected Annually in Sacrament Program) / (Number of PRI Inspectors in Sacramento)*

Equation 2: *Cost per Unit= (Average Annual Cost per Inspector) / (Units per Inspector per Year)*

Equation 3: *Total Administrative Costs= (Average Costs per unit) * (Total Units in International Corridor)*

Refer to **Appendix Table A.1** for detailed administrative cost calculations.

Property Maintenance Costs

Overview

As inspections occur, landlords will be required to spend more on maintenance expenses. This will increase the marginal cost of supplying rental housing. These costs may not be fully recuperated from tenants due to rent control laws limiting the amount rent can be increased in a given year, although as tenant turnover occurs, rents can be raised to market rates. These costs are estimated to be on average $565 per unit for properties requiring maintenance.

Methodology

Per unit maintenance costs are a function the rate of mold in study area resulting in major and minor maintenance and the cost for the corresponding repairs. The estimated rate of mold violations in the International Corridor was determined by multiplying the baseline rate for the Oakland-Fremont-Hayward MSA (6.6% of rental units) by a weighting factor of four. There is roughly a four times greater rate of reported code violations in the treatment area compared to the rest of Oakland based on the Urban Strategies Council analysis of data from the City of Oakland.

The distribution of minor and major violations was based on the ratio of minor to major physical housing problems reported by renters in the American Housing Survey for the Oakland-Fremont-Hayward MSA. This category was not specific to mold; therefore, we think that this biases our estimate of major mold problems upward (leading to an upward bias in our cost estimate).

Finally, the cost estimates for improvements needed to remedy mold issues were based on estimates provided by an Oakland public health official who is working on the PRI program.

Mathematical Explanation:

We estimate the increase in maintenance cost by estimating the number of housing units in the area that are in violation of the housing code and the distribution of costs to remedy the violation.

*Maintenance Cost = (number of total housing units) * (violation rate) * (average cost to remedy violation)*

Refer to **Appendix Table A.2** for detailed maintenance cost calculations.

Tenant Relocation Costs

Overview

Tenants will be temporarily relocated when major renovations are required. The cost to society of this impact is the consumption of temporary housing resources (e.g., hotels), transportation resources, loss of personal networks, and psychic costs of moving or not living at home.

The policy requires that landlords compensate tenants for temporary relocation. We anticipate that this cost will be around one month's rent on average. In other cases, landlords will find the cost of renovation makes their property unprofitable and will take the property off the market. Tenants in these properties will be permanently relocated. The value is dependent on the number of residents on the property.

We assume that the cost to residents of relocation is adequately covered by the relocation benefits (a simplified assumption that may be relaxed pending the results of further research). If this assumption holds, we can model the value of the relocation assistance as the consumer's willingness to accept moving to a new residence. This is not considered a transfer since the landlord is compensating the tenant for a welfare loss inflicted on him.

Methodology

Project costs for relocation are based on the assumption that that one-percent (1.0%) of households inspected will require permanent relocation. Currently, figures on inspection violations resulting in permanent relocation are not kept by the City of Oakland. For the purpose of this analysis, this assumption is based upon discussions with Oakland building inspection officials. Permanent relocation costs per unit were developed from data regarding financial assistance provided by the Los Angeles Relocation Assistance Program. Assistance through this program is based upon a formula taking into account household size and rent.

Mathematical Explanation:

Equation 1: *Total Units Needing Relocation = (No. of Units with Major Mold Problems) * (Percentage of Units Requiring Relocation)*

Equation 2: *Total Cost of Relocation = (Average Cost per Unit for Relocation in the Los Angeles Rental Assistance Program) * (Total Units Needing Relocation)*

Refer to **Appendix Table A.3** for detailed of relocations cost calculations.

Sub-Optimal Housing Bundle

Overview

If we assume that residents have perfect information and that landlords supply an adequate mix of housing services bundled within different units, then we should assume that residents choose properties where the marginal benefit of housing quality is equal to the marginal benefit of size, location, and other characteristics of the property. If this is true, then implementing a floor on quality moves some residents away from their optimal bundle. This is likely to manifest in residents moving to smaller units than they would otherwise desire.

Methodology

In order to capture the cost of imposing a floor on housing quality, we quantify the reduction in housing size that results from the policy and the value consumers place on size. We assume that expenses for making major repairs will qualify as capital improvements. Under Oakland's rent control ordinance, landlords can pass on 70% of capital improvement expenses to tenants by increasing their rents up to 10% per year. We assume that tenants in this area have a constant budget share for housing. Rent to income ratios are above 50% in this area and we do not expect households to afford increased rents. We assume that renters will respond to increased rents by moving to smaller units. These smaller units will be of better quality than their prior units. We assume that the consumers do not value the improved quality as much as the quantity (i.e. unit size) they were required to give up. This is where the economic inefficiency is manifested.

Mathematical Explanation:

We estimate the cost of moving to a suboptimal bundle of housing goods in the following way:

*(Number of units requiring major repairs) * (number of people per unit) * (annual rent increase) * (% of rent increase that is deadweight loss)*

This represents the deadweight loss to society that is due to an inefficient allocation of housing resources.

Refer to **Appendix Table A.4** for **a** detailed calculation of the cost of moving to a suboptimal bundle of housing goods.

Benefits from Changes in Health Outcomes

This section describes the primary benefits of the proposed PRI program: improvements in health outcomes associated with an improvement in housing quality.

Improvements in Housing Quality

This output specifically looks at the impact of increased housing quality on individual health outcomes. We look at changes pre- and post-program implementation in housing violations that are associated with asthma (lead, vectors, and mold). We use Quality Adjusted Life Year (QALY) estimates from public health literature to determine the impacts for the Oakland program. In addition to the QALY estimates, additional benefits are accrued from avoided medical costs for asthma visits in units where mold abatement has occurred. These medical costs include emergency room visits and more serious hospitalizations.

Methodology

For this input, we assume that the only health impact on asthma of housing quality is caused by mold. As discussed in the limitations section, we assume that abatement of mold in inspected units will occur at a rate of 80%. The percentage of emergency department visits per person with asthma in a given year ranges from 7.49% to 20.9% as reported by California Breathing and the American Housing Survey, respectively. We assume that the rate of hospitalization and of emergency department visits due to asthma will decline at the same rate with the reduced incidence of mold.

Mathematical Explanation:

Background Equations

Equation 1: *Incidence of mold and asthma = (population of abated units) * (baseline asthma rate)*

Equation 2: *Number of asthma cases avoided = (incidence of mold and asthma) * (rate of mold-induced asthma)*

Equation 3: *Number of emergency room visits per person with asthma = (rate of the emergency room visits due to asthma per 10,000 people) / (asthma per 10,000 people)*

Equation 4: *Number of emergency room visits avoided = Number of emergency room visits per person with asthma * number of asthma cases reduced*

Equation 5: *Number of hospitalizations avoided = (Number of emergency room visits avoided) * (Number of hospitalizations relative to emergency room visits)*

Impact equations

Equation 1: *Total avoided medical costs= (Number of emergency room visits avoided * cost of emergency room visit) + (Number of hospitalizations avoided * cost of hospitalization)*

Equation 2: *Change in QALY per person = Change in HRQL * 1 year*

Equation 3: *Sum of QALYs = (Change in QALY per person) * (Number of people with asthma cured)*

Equation 4: *Monetary value of QALYs = (Sum of QALYs) * (Value of a Life Year)*

Equation 5: *Total Benefits = Monetary value of QALYs + Total avoided medical costs*

Please refer to **Appendix Table A.5** for a calculation of annual mold incidences avoided. **Appendix Table A.6** calculates the value of avoided asthma costs, and **Appendix Table A.7** details the benefits from changes in QALYs.

Results

Time Discounting

We projected impacts over a twenty-year time horizon. The policy has two distinct stages: the first two years of implementation when all rental units are inspected (50% of units in each year) and the subsequent eighteen years when 10% of units are proactively inspected each year. With the policy affecting more units in years 1 and 2, the undiscounted costs and benefits are significantly higher at program outset relative to program maturity in years 3-20. The lower costs and benefits in years 3-20 are also due to our expectation that far fewer units will fail inspections and need maintenance after the initial round of inspections is completed.

To calculate the health benefits of our policy, we projected the number of people that would be affected by the policy in each of the twenty years in the project time horizon. We assumed that each cohort affected would receive benefits from asthma relief for twenty years into the future. We discounted the QALYs for each cohort back to the year that they were affected by the policy. We then discounted the health benefits of each cohort year back to the present date.

Table 1 summarizes the discounted net benefits of the preferred alternative. The results are compared to the net benefits of the status quo. In this case, we estimated that the program has a positive net benefit of $49.5 million over the 20-year time horizon.

Table 1: Net Benefit Summary

		Preferred Alternative
Costs		
Administrative Costs	$	2,219,129
Maintenance Costs		12,039,207
Relocation Costs		224,685
Suboptimal Bundle		1,345,929
Total - Costs	$	15,828,950
Benefits		
Asthma Reductions	$	168,372
Asthma QALYs		64,256,796
Total - Benefits	$	64,425,168
Net Benefits	$	48,596,218

Sources: Appendix Tables A.1 through A.7.

Monte Carlo Simulation

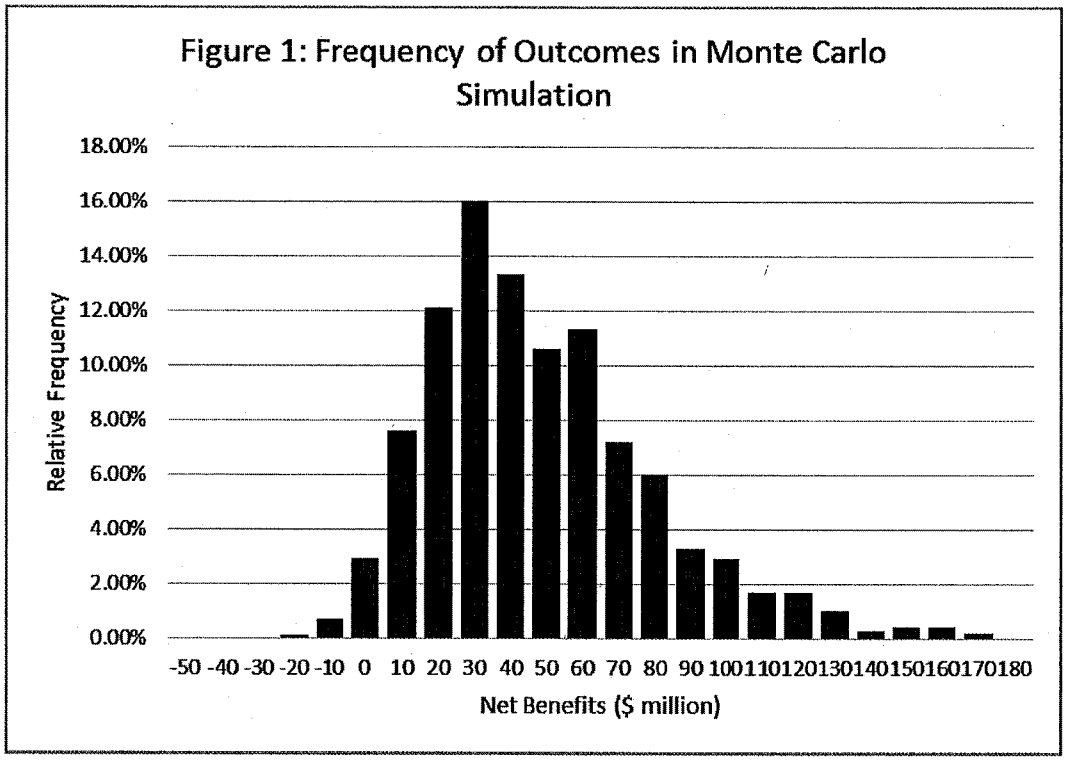
We included 14 parameters in our Monte Carlo simulation (please refer to **Appendix Table A.8** for a complete list of parameters). For parameters that we had little confidence in estimating (mold abatement rate, weighting factors, percent of units with major problems that require relocation, deadweight loss due to suboptimal housing bundle), we allowed the parameters to vary over a wide range.

The Monte Carlo simulation resulted in a strong net benefit of adopting the PRI policy program across 1,000 trials. Even with the parameters that had a large variation less than four-percent of the simulations returned negative net benefits. **Table 2** shows the range of net benefits. There is a 96.29-percent probability that the benefits will be positive, with the highest frequency of simulations estimating net benefits between $20 and $30 million.

Table 2: Monte Carlo Results - Net Benefits

Minimum Net Benefits	(27,981,858)
Maximum Net Benefits	299,016,896
Average Net Benefits	43,897,717
Probability of Positive Net Benefits	96.29%

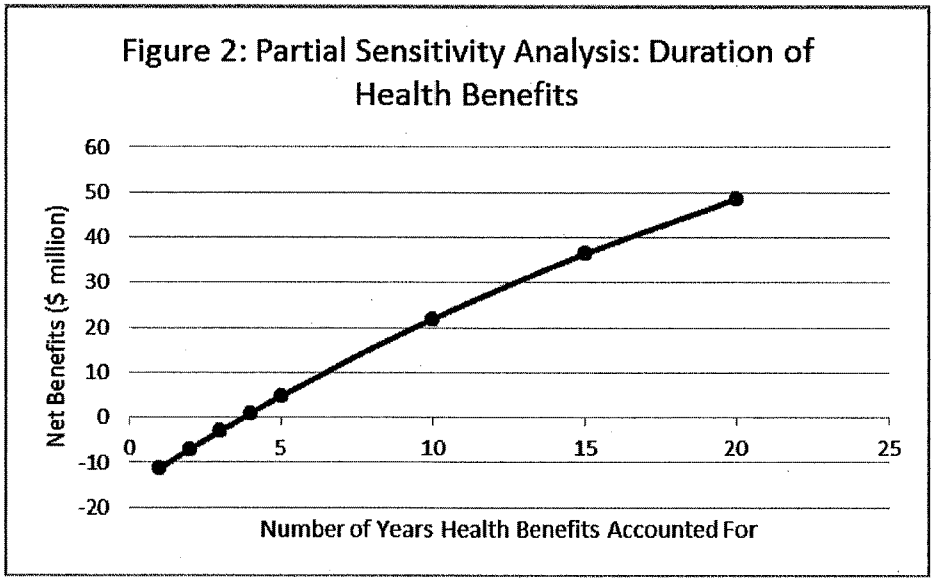
Figure 1 shows a histogram of the distribution of the outcomes from the Monte Carlo simulation.



Partial Sensitivity Analysis

We conducted a sensitivity analysis of the social discount rate (SDR), testing over the range of three to seven percent, the SDR recommended by the Office Management and Budget. Given the robust results of the Monte Carlo simulation and the lack of confidence we have in our preferred estimates, we did not expect partial sensitivity analysis of any of the parameters in our Monte Carlo to produce meaningful information.

We found, however, that our results are most sensitive to the time period over which we calculate health benefits for people that are relieved of asthma. We assume that once relieved of asthma, people continue to receive the health benefits for twenty years into the future. This is a simplifying assumption so the analysis could avoid projecting life expectancy. Our results are robust to reducing this assumption to ten years. The breakeven point, based on our preferred estimates for all other parameters, is between two and three years of benefits as shown in the chart below. The longer the persistence of the health benefits, the greater confidence we have in the recommendation of this policy.



Caveats and Limitations

Limitations

1. The estimates for several of the parameters in our model may be significantly inaccurate.
    a. The duration of the expected health benefits are unknown. We assume that a portion of tenants will be relieved of asthma after mold is removed from their residence and we assume these health benefits last for twenty years. The benefits, however, may be temporary. For instance, a tenant may move to a different house that has mold prompting a reoccurrence of asthma.
    b. There was no information available on the effectiveness of rental inspection programs on mold abatement. For our preferred estimate, we assume that 80% of units that have mold violations will have the mold removed from the unit. If the program is not effective at eliminating mold and preventing mold from returning, the benefits of the program would be significantly lower.
    c. There are many factors that contribute to asthma besides indoor mold. While we found a study that estimated a correlation between mold and asthma, we cannot be sure that residents in the International Corridor are similar to people included in the study that our estimate is based on.
2. We may be significantly underestimating the costs of displacement. Our model assumes that tenants in the International Corridor are protected by Oakland rent control ordinances, even though single-family units are not covered by current law. If rent control protections are not extended to single-family units, landlords may increase rents to reflect the improved quality of renovated units in order to comply with building codes. This may displace more residents that we project in our model.

3. The choice of parameters for the baseline asthma rates, rate of emergency room visits, and cost of emergency room visits are limiting, as they have wide ranges based on data made available by the American Housing Survey and California Breathing.
4. The weighting factors for the number of units needing repair, pre- and post-inspection, are based on an educated guess based the prevalence of reported code violations in the International Corridor relative to the rest of Oakland. If the number of mold violations is less than assumed, the decrease in benefits of the program would be greater than the decrease in maintenance costs

Cost Biases

1. The administrative costs of the program were incorporated in the projected inspector salary costs. These could be underestimated due to training needs and additional administrative demands. While these costs are not significant relative to the size of the program they could bias costs downwards.
2. The rate of units with major problems will probably be two and ten percent. The analysis assumed a rate of twenty percent and underestimated the rate of minor problems. This assumption biases the costs upwards.
3. The household replacement rate may affect inspection rates. We expect this replacement rate to be negligible. This assumption biases our costs downwards.
4. The cost of relocation for tenants with major problems was based on the Los Angeles Rental Assistance Program fine to landlords for relocation costs. As this is potentially underreported and does not take into account the administrative costs, it may have biased our cost estimates downwards. We decided to use this cost, however, because the housing landscapes of Oakland and Los Angeles are comparable.
5. The PRI policy essentially creates a floor on housing quality. This leads to a deadweight loss when the renter is unable to choose their optimal housing bundle because the quality is too low. We estimated that this deadweight loss would be more than zero but less than the total rent increase. This could lead to a potential underestimation of the cost.

Benefits Biases

1. We assumed that the rate of inspections in Oakland would equal that of Sacramento RHIP. As Sacramento's program is already established this will bias our benefits upwards. It is likely that there may be a learning curve with the inspections that will cause the initial rate at which they occur to be slightly lower.
2. Asthma reduction as a cause of mold abatement is not the only positive health outcome of improving the quality of housing. As it is the only health outcome we have included in this analysis, the section that quantifies health benefits may be significantly downwardly biased.
3. A twenty-year time horizon a conventional timeframe used to discount benefits of a policy program. This time horizon, relative to a shorter one, biases our benefits upwards because it assumes a positive relationship between health benefits and social benefits that will persist.

4. We assumed the baseline rate of violations would be at the region's average in years three to eighteen; because these units will already have been inspected once the baseline rate will likely be lower than region's average. This assumption biases our costs upwards.

Policy Context

From 2000 to 2012, median rents in California increased by over twenty percent while the median income dropped eight percent.[1] These changes placed huge burdens on low- and moderate-income households, who find themselves forced to pay far more of their income to housing than the 30 percent traditionally deemed sustainable.[2] Furthermore, rents are only expected to increase as California continues to face a projected affordable housing shortfall of 1,194,957 households affordable to the most vulnerable of our communities.[3]

With alarming regularity, families live among chipping lead paint and mold, leading to high rates of lead poising and asthma for children.[4] When such unsafe conditions affect tenants of rental properties, children and families bear the cost of a landlord's inability or unwillingness to maintain the property. Predictably, vulnerable populations disproportionally face these risks.[5,6] PRI programs seek to protect vulnerable tenants from unsafe living conditions by systematically and preemptively inspecting rental units for code violations.

Because of the limitations in the data available, the projected costs and benefits presented by this report need to be revised by the city before a final program decision can be made. This report should be used to think through the inputs that will be affected by the program as this report aims to provide background research for future work solidifying these estimates.

The main takeaway of this analysis is the relative importance of health impacts in determining the net benefits of this program. Because these impacts do not represent fiscal line items but rather broader social benefits, it is the City of Oakland's discretion to determine the importance of these impacts when considering program implementation.

The results of this analysis are in favor of enacting the program, although further policy analysis is necessary before a policy recommendation can be made. While actual costs to society and the City of Oakland are anticipated to be higher than estimated above, the significant projected net benefits resulting from deferred costs due to improvements in health outcomes far exceed any increase in costs.

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[1] CHPC 2014
[2] HUD
[3] CHPC 2014
[4] Urban Strategies Council 2013
[5] ibid.
[6] More resources on Healthy Housing issues in California can be found at: http://www.cahealthyhousing.org/resources

References

1. American Community Survey (2013), Tables B25024 and B25033 for Oakland Zip Code Tabulation Areas (ZCTA).
2. American Housing Survey 2011.
3. California Breathing, Alameda County Asthma Profile: http://www.californiabreathing.org/asthma-data/county-asthma-profiles/alameda-county-asthma-profile
4. (CHPC 2014) California Housing Partnership Corporation. *How California's Housing Market is Failing To Meet The Needs of Low-Income Families.* 2014. http://www.chpc.net/dnld/CHPCHousingNeedReport020814FINAL.pdf
5. Labayog, Ed; Presentation on Proactive Rental Inspection; November 5, 2014.
6. Guy, Ethan, Marqusee, Alex; An Analysis of Proactive Rental Inspection Policies in California; Policy Matters Journal; Fall 2014.
7. Acland, Daniel J., In-Class Hand-out; Benefit Cost Analysis, HRQol Table; October 30, 2014.
8. Lin, Margaretta; Director of Strategic Initiatives Oakland Department of Housing and Community Development; November 19th, 2014; Email to Ethan Guy.
9. Los Angeles Rental Assistance Program: http://lahd.lacity.org/lahdinternet/CEUSCEP/tabid/395/language/en-US/Default.aspx
10. Mudarri D. and Fisk, W.J. *Public health and economic impact of dampness and mold* Article first published online: 29 MAY 2007: http://onlinelibrary.wiley.com/doi/10.1111/j.1600-0668.2007.00474.x/abstract;jsessionid=80D190E0D6F562A928E994E7F7D73913.f02t01
11. Oakland Sustainable Neighborhood Initiative – Housing Affordability Table, Urban Strategies Council; 2014.
12. Urban Strategies Council. *Building an Inspector Base for Health Housing Issues in Oakland.* Prepared for Alameda County Healthy Homes Alliance. November 2013
13. Yamashita, Brenda; Chronic Disease Program Director Alameda County Public Health; October 24, 2014; E-mail to Ethan Guy.

Appendix

Appendix Table A.1: Present Discounted Value of Administrative Costs

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total Units	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
% Inspected in Year	0.50	0.50	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
# Inspected in Year	7,500	7,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
# of Inspectors Needed	4.19	4.19	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Annual Salary/Benefits/Overhead per Inspector	$ 121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413	$121,413
Annual Administrative Cost	$ 508,714	$508,714	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743	$101,743
Present Discounted Value - Annual Admin Costs	491,511	474,890	91,766	88,663	85,665	82,768	79,969	77,265	74,652	72,127	69,688	67,332	65,055	62,855	60,729	58,676	56,691	54,774	52,922	51,132
Total Present Discounted Value of Admin Costs	$2,219,129																			

Sources: City of Oakland Code Enforcement; Sacramento RRI Program.

Appendix Table A.2: Present Discounted Value of Maintenance Costs

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total Units	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
% Inspected in Year	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
# Inspected in Year	7,500	7,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Baseline Rate of Mold	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Weighting Factor	4.00	4.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Rate of Mold in Target Area	0.26	0.26	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
# of Units Inspected with Mold	1,983	1,983	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149
% of Units with Major Problems	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
# of Units with Major Problems	595.04	595.04	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63
Per Unit Cost of Fixing Major Problem	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000
Total Cost to Fix Major Problem	3,570,248	3,570,248	267,769	267,769	267,769	267,769	267,769	267,769	267,769	267,769	267,769	267,769	267,769	267,769	267,769	267,769	267,769	267,769	267,769	267,769
% of Units with Minor Problems	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
# of Units with Minor Problems	1,388.43	1,388.43	104.13	104.13	104.13	104.13	104.13	104.13	104.13	104.13	104.13	104.13	104.13	104.13	104.13	104.13	104.13	104.13	104.13	104.13
Per Unit Cost of Fixing Minor Problem	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500
Total cost to Fix Minor Problems	694,215	694,215	52,066	52,066	52,066	52,066	52,066	52,066	52,066	52,066	52,066	52,066	52,066	52,066	52,066	52,066	52,066	52,066	52,066	52,066
Total Increase in Maintenance Costs	$4,264,463	$4,264,463	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835	$ 319,835
PDV of Annual Maintenance Costs	4,120,254	3,980,922	288,473	278,717	269,292	260,186	251,387	242,886	234,673	226,737	219,069	211,661	204,504	197,588	190,906	184,451	178,213	172,187	166,364	160,738
Total Present Discounted Value of Maintenance Costs	$12,039,207																			

Sources: American Housing Survey (2011); City of Oakland; Urban Strategies Council; U.S. Census Bureau, 2013 American Community Survey, Tables B25024 and B25033.

Appendix Table A.3: Cost of Relocations

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
# of Units with Major Problems	595.04	595.04	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63
% of Major Problem Units that require Relocation	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Number of Units needing Relocation	5.95	5.95	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Cost of Relocation Per Unit[1]	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375	$ 13,375
Annual Relocation Cost	$ 79,587	$ 79,587	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969	$ 5,969
Present Discounted Value of Annual Relocation Cost	76,895	74,295	5,384	5,202	5,026	4,856	4,692	4,533	4,380	4,232	4,088	3,950	3,817	3,688	3,563	3,442	3,326	3,213	3,105	3,000
Total Present Discounted of Relocation Cost	$224,685																			

1 Based on estimated costs from the Los Angeles PRI program.

Sources: City of Los Angeles Systematic Code Enforcement Program (SCEP); Appendix Table A.2.

Appendix Table A.4: Present Discounted Value of Suboptimal Housing Bundle

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Number of units requiring major repairs	595.04	595.04	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63	44.63
Total Annual Rent Increase (transfer from tenants to landlords)[1]	$ 833,058	$ 1,666,116	$ 1,728,595	$ 958,017	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438	$ 187,438
Annual Present Discounted Value of rent increase	804,887	1,555,337	1,559,094	834,856	157,818	152,481	147,325	142,343	137,529	132,878	128,385	124,043	119,849	115,796	111,880	108,097	104,441	100,909	97,497	94,200
Total Present Discounted Value of rent increase (transfer)	$ 6,729,643																			
Total welfare loss due to consuming suboptimal bundle	$ 1,345,928.68																			

[1] Assumes landlords recoup max amount over 3 years. This means that the total annual increase is based on the annual increase associated with capital improvement costs from *Table 9* applied to the number of units impacted over the current year and two prior years.

Sources: City of Oakland; U.S. Census Bureau, 2013 American Community Survey, Tables B25024 and B25033; Appendix Table A.2.

Appendix Table A.5: Asthma Incidences Avoided by Removing Mold

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total Units	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
% Inspected in Year	0.50	0.50	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
# Inspected in Year	7,500	7,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
MSA Baseline Rate of Mold problems	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Weighting Factor	4.00	4.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Estimated rate of mold violations in target area	0.26	0.26	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
# of Inspected Units with mold violations	1,983	1,983	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149
Abatement Rate[1]	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
# of Units where Mold was removed	1,587	1,587	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119
# of Units that are single-family	683	683	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
# of Units that are multifamily	904	904	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
# of People in Single-family where mold was removed	2,301	2,301	173	173	173	173	173	173	173	173	173	173	173	173	173	173	173	173	173	173
# of People in multifamily where mold was removed	1,944	1,944	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146
Total # of people in homes where mold was removed	4,244	4,244	318	318	318	318	318	318	318	318	318	318	318	318	318	318	318	318	318	318
% of people with asthma	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%
# of people with asthma in homes where mold was removed	480	480	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Estimate of mold's causal impact on asthma (Beta coefficient)	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Asthma Incidences Avoided by Removing Mold	100.7	100.7	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6

[1] It is assumed that 80% of the units needing repairs to remedy mold issues will actually be success

Sources: American Housing Survey (2011); Alameda County Asthma Profile; U.S. Census Bureau, 2013 American Community Survey, Tables B25024 and B25033.

Appendix Table A.6: Present Discounted Value of Avoided Asthma Incidences

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Asthma Incidences Avoided[1]	100.7	100.7	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
# of ER Visits Avoided	7.6	7.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
# of Hospitalizations Avoided	2.0	2.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ER costs avoided[2]	$ 26,439	$26,439	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983	$ 1,983
Hospitalization Costs Avoided[3]	33,200	33,200	2,490	2,490	2,490	2,490	2,490	2,490	2,490	2,490	2,490	2,490	2,490	2,490	2,490	2,490	2,490	2,490	2,490	2,490
Total Avoided Costs	$ 59,640	$59,640	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473	$ 4,473
Present Discounted Value of Avoided Costs	57,623	55,674	4,034	3,898	3,766	3,639	3,516	3,397	3,282	3,171	3,064	2,960	2,860	2,763	2,670	2,580	2,492	2,408	2,327	2,248
Total present Discounted Value of Avoided Costs	$ 168,372																			

[1] Based on Number of ER Visits per person with Asthma per year from AHS. Calculated specifically based on reported asthma rates for OUSD students for the three zip codes in Oakland where the study area is located (94601, 94606, 94621) as of 2011.
[2] Based on average cost of $500 per ER visit, per Alameda County Asthma Profile.
[3] Based on average cost of $16,585 per ER visit, Alameda County Asthma Profile.

Sources: Alameda County Asthma Profile; American Housing Survey (2011) for the Oakland-Fremont-Hayward MSA; Oakland Unified School District; Appendix Table A.5.

Appendix Table A.7: Benefits from Change in QALYs

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Change in QALY for one year[1]	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Discounted Value of QALY	0.15	0.15	0.14	0.14	0.13	0.13	0.12	0.12	0.12	0.11	0.11	0.11	0.10	0.10	0.09	0.09	0.09	0.09	0.08	0.08
Present Discounted Value of QALYs	2.26																			
# of Asthma cases reduced (Appendix Table A.5)	100.72	100.72	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55	7.55
Change in QALY per person	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26
Total Change in QALYs	227.61	227.61	17.07	17.07	17.07	17.07	17.07	17.07	17.07	17.07	17.07	17.07	17.07	17.07	17.07	17.07	17.07	17.07	17.07	17.07
Value of QALY[2]	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000
Value of Change in QALYs	$ 22,760,694	$22,760,694	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052	$ 1,707,052
Present Discounted Value of Change in QALYs	21,991,009	21,247,352	1,539,663	1,487,597	1,437,292	1,388,688	1,341,727	1,296,355	1,252,517	1,210,161	1,169,238	1,129,699	1,091,496	1,054,586	1,018,923	984,467	951,176	919,011	887,933	857,906
Total Value of Change in QALYs	$ 64,256,796																			

[1,2] Acland, Daniel J., In-Class Hand-out; Benefit Cost Analysis, HRQol Table; October 30, 2014.

Sources: Appendix Table A.5

Appendix Table A.8: Monte Carlo Assumptions

	Distribution	Min	Max	Mode	Mean	St Dev
Mold Abatement Rate	Triangular	0.3	1	0.8		
Asthma Rate	Triangular	0.113	0.25	0.113		
Mold/Asthma Correlation	Normal				0.21	0.085
ER visits per year for asthma patients	Uniform	0.0749	0.209			
Pre-treatment Weighting Factor	Uniform	2	4			
Post-treatment Weighting Factor	Uniform	1	2			
Percent of Mold Problems that are Minor	Triangular	70%	95%	85%		
Cost of Minor Repairs	Triangular	300	700	500		
Cost of Major Repairs	Triangular	2,000	10,000	6,000		
% of Units needing Major Repairs that also need relocation	Triangular	0.01	0.25	0.1		
Deadweight Loss due to Suboptimal Bundle (as % of rent increase)	Uniform	0.1	0.5			
Social Discount Rate	Uniform	3.0%	7.0%			
HRQoL	Uniform	0.1	0.159			
Value of QALY	Uniform	50,000	125,000			