# **UCLA**

# **Working Paper Series**

## **Title**

Evaluating ADU/Homelessness Programs

## **Permalink**

https://escholarship.org/uc/item/92m863v8

## **Author**

Wasserman, Jacob L

## **Publication Date**

2019-03-15



# **Working Paper Series**

# **Evaluating ADU/Homelessness Programs**

Jacob L. Wasserman

March 2019



## **About the UCLA Lewis Center**

The Ralph & Goldy Lewis Center for Regional Policy Studies advances research on how people live, move, and work in the Los Angeles region, with a focus on policies and interventions that provide paths out of poverty. Since 1989, Lewis Center scholars and staff have produced high-quality research, programs and events, and accessible publications for policymakers, officials, students, opinion leaders, and the public. The Lewis Center leverages research grants from affiliated scholars to create a diverse research portfolio.

# **Acknowledgments**

Supported by the Randall Lewis Housing Initiative. This paper was originally submitted as a UCLA Luskin class assignment.

# **Abstract**

In response to a worsening homelessness crisis, Los Angeles City and County have recently looked to accessory dwelling units (ADUs) — small second homes on the same lot as a single-family home — as a part of the solution. Pilot programs in both jurisdictions offer homeowners subsidies for ADU construction in exchange for housing a person experiencing homelessness for between three and 10 years. In this paper, I evaluate the scalability, longevity, efficacy, political feasibility, and cost-effectiveness of these programs compared to traditional multifamily supportive housing. In doing so, I employ the metric of cost per year of affordability, to compare cost-effectiveness for programs of varying duration. I find that while ADU programs may be more politically feasible and have moderate potential to be scaled up, they will encounter significant difficulties in reaching that potential. They lack the longevity of traditional supportive housing, will either prove less cost-effective or will depend on homeowner contributions that may not materialize, and will have mixed effects on quality of life for formerly unhoused residents, among other hurdles. With private lenders still wary of the ADU market, greater scale and cost-effectiveness may be achieved by fostering private ADU investment, offering fee waivers to homeowners who agree to house a person experiencing homelessness, and supporting unhoused residents more directly with housing vouchers.

## Introduction

Los Angeles County faces a severe homeless crisis. Over 52,000 residents lacked a home in 2018—a ten percent increase from 2009. Only one quarter have a shelter bed. Many more not included in the count are currently "underhoused" in substandard conditions and/or risk experiencing homelessness in the near future (LAHSA, 2018 and LAHSA, 2013). The county thus faces the pressing problem of how to provide its homeless or housing-insecure residents with a long-term home. Any solution must be able to meet the wide scope of the crisis, must cost-effectively use finite public funds, must provide good outcomes for the tenants themselves, and must be politically feasible.

County and municipal planners have proposed accessory dwelling units (ADUs) as a solution. Sometimes called a second unit, a granny flat, an in-law unit, or a back house, an ADU is a small home on the same lot as a single-family house. Sized at up to 1,200 square feet in California, ADUs either sit in a separate structure or lie connected to, above, or below the main home (Chiland, 2018b).

Los Angeles County and City have begun pilot programs to subsidize homeowners' construction of an ADU in exchange for housing a person experiencing homelessness in it (Gonzalez, 2019 and Taheri, 2019). Despite their good intentions, these program and others similar to them suffer from a number of faults, and their potential expansion likely will not provide affordable housing at scale effectively.

Depending on how they are structured once expanded beyond the pilot phase, the programs will either prove less cost-effective than traditional affordable housing or will depend on homeowner contributions that may not materialize. Affordable leases likely will not be renewed after the program term. After some initial excitement, interest in participating will fall, as it has in the existing pilots. Among other scalability challenges, permitting will continue to prove difficult, and sustaining interest may require giving homeowners vetoes over tenants, a potentially discriminatory practice. Finally, though ADU/homelessness pilots have proven popular, they do not necessarily provide substantively better outcomes for their tenants and may actually take political capital away from other, more impactful policies.

Instead, if the county or municipalities still wish to pursue ADUs as an anti-homelessness strategy, I recommend they encourage private ADU construction, by fostering new loan products for ADUs, and then offer to house homeless tenants therein in exchange for fee waivers and expedited permitting. Doing so will only go so far, but governments could use the public funds saved by not directly subsidizing ADU construction for any number of other housing initiatives.

This working paper is intended as a guide to and policy evaluation of the ADU/homelessness programs, in Southern California in particular, but not as a detailed estimation/breakdown of the exact costs of such programs or of ADUs construction. Indeed, I rely on expert estimates for parts of the calculations herein. However, this paper does add to conversation about affordable housing a particular emphasis on costs *per year of affordability*, a fairer metric for this type of comparison and analysis than total unit costs.

# **Program Alternatives**

Up and down the West Coast, policymakers have devised a number of variations on the idea of subsidized ADUs to house the homeless. These implementations range widely—for instance, the Block Project in Seattle uses all-volunteer funds and labor (Barnett, 2018)—but herein, I analyze the three most significant policy models:

- Fully subsidized construction: represented by Multnomah County (Portland, Oregon)'s A Place for You program
- 2. Partially subsidized construction: represented by Los Angeles County's Second Dwelling Unit Pilot Program and the City of Los Angeles' Accessory Dwelling Unit Program
- 3. Unsubsidized construction bolstered with other incentives: represented by LA-Más' Backyard Homes Project and San Diego County's ADU fee waiver

The bulk of this working paper analyses whether subsidized construction (Models 1 and 2) offers better outcomes than "traditional" affordable housing—i.e., projects utilizing the Low-Income Housing Tax Credit (LIHTC), the federal program that provides the primary funding for affordable developments today. I defer a full description and assessment of Model 3 until the conclusion of this paper. It shares many benefits with the other models but does not involve significant subsidies, which are the most pressing question at hand.

## Multnomah County's A Place for You Program

Multnomah County has implemented America's most developed ADU/homelessness program to date, A Place for You. Like Southern California, the Portland area is facing a growing homelessness crisis. In response, the Multnomah Idea Lab, an innovation office in the county's government, began planning an ADU pilot in 2015. After a rocky rollout, A Place for You finished construction of four ADUs in the summer of 2018. The program works as follows: in exchange for housing for five years tenant(s) transitioning out of homelessness, the county paid in full for the construction of an ADU on the land of selected homeowners. The homeowners had no say in the design of the units nor in the selections of tenants. Staff at A Home for Everyone, the region's coordinated homeless entry and support system, chose tenants who did not require intensive on-site services. For the next five years, these residents functionally live in scattered-site public housing: they pay 30 percent of their income to the county, to cover utilities and maintenance, and the homeowners do not receive any rental income, from vouchers or otherwise. After five years, the county will sell the unit to the homeowners for a nominal price, likely \$1, at which point they can rent it out as they see fit. The county is waiting to see how the first four units fare before considering expansion (Van Eck, 2019; French, 2018; and Multnomah County, 2018).

#### Los Angeles County's Second Dwelling Unit Pilot Program

Approved by the Board of Supervisors in August 2017, Los Angeles County has embarked on a comparable pilot with a few key differences. Administered by the L.A. Community Development Commission (LACDC), the program provides selected homeowners in unincorporated L.A. County with a partial subsidy for ADU construction: a soft loan of \$75,000 for new units and \$50,000 for rehabilitation of existing structures, funded through Measure HHH. If the homeowner houses a homeless tenant or family for five years, they can repay the loan on favorable terms; for ten years of housing, they can have the loan forgiven, effectively becoming a grant. Unlike in Portland, the homeowner owns the ADU from the start and has say on the size and design. The non-profit design group LA-Más is providing architectural and technical support and homeowner recruitment, LACDC is handling permitting, and Brilliant Corners is providing supportive services to tenants, through a federal Community Economic Development grant. Tenants are chosen from the Homeless Initiative; unlike Portland's program, the homeowner can set preferences, meet with tenants beforehand, and veto them. Tenants can be swapped out over the course of the program if they fail to pay rent or if they find other housing. Again unlike Portland, homeowners will collect rent, paid in part through vouchers managed by the county's Housing Authority

or Department of Health Services. The county has moved forward with four ADUs, one of which is accessible to disabled residents and none of which is complete yet (Gonzalez, 2019 and Dobie-Gonzalez, 2019).

## City of Los Angeles's Accessory Dwelling Unit Program

As the county breaks ground, the City of Los Angeles is in the planning stages of its own program. The city won a \$1 million grant from Bloomberg Philanthropies' Mayors Challenge (though staff had applied for \$5 million), matched with \$1 million from the development linkage fee. Staff have not yet set in stone the details of the program, but current plans call for much smaller grants of \$10,000 to \$20,000, in exchange for housing currently homeless or at-risk tenants for three to five years. Planners are also considering a larger grant for ten to 15 years of housing. Otherwise, the program will operate similar to the county's: tenants selected from the Homeless Services Authority (the city's coordinated entry system) and matched in consultation with the homeowners; rent paid through Section 8 or veterans' housing vouchers; and services provided by a non-profit to be determined (Taheri, 2019; Bloomberg Philanthropies, 2018; and Carpenter, 2018). Unique from the other two models, the city program will test whether a grant that covers only a fraction of ADU costs is enough to incentivize participants.

#### Control Policy: Low-Income Housing Tax Credit

These pilot programs contrast with the model of affordable housing most prevalent in the past two decades, multifamily housing financed by the Low-Income Housing Tax Credit. In brief, LIHTC gives developers ten years of tax credits: guaranteed credits worth three to four percent of the project's eligible costs every year or competitive credits worth nine percent of eligible costs every year. The developer then sells the credits to an investor, with whom they join in a legal partnership, and uses the proceeds to build multifamily, income-restricted housing. Programs like the state's Affordable Housing and Sustainable Communities or the county's Measure HHH help developers cover funding gaps (Ling, 2018).

## **Criteria**

The Los Angeles and Portland programs each certainly provide benefits to homeowners and tenants alike. But in order to determine if they are the best way to help reduce the county's homelessness crisis, I evaluate them on the following five criteria:

- Cost-effectiveness: Which method most cost-effectively houses the most people, given the county's limited budget? To ensure this metric treats housing as more than just one-time shelter, I compare cost per unit *per year of affordability*.
- Longevity: Which policy best creates long-term housing, without additional expenditures or expansion? In other words, in order to house a new tenant or to keep housing the same tenant five years from now, will a new unit need to be built? Or will affordable leases be renewed?
- Scalability: Will the program be able to provide the hundreds of units necessary to make even a small
  dent in the region's homelessness housing need? Other than costs, covered by the first criterion, this
  metric compares both the potential for a program to scale up and the logistical difficulties in meeting that
  potential.
- Suitability for people transitioning from homelessness: Does the program provide stability in tenants lives and help avoid later returns to homelessness? This criterion covers a range of tenant outcomes, all

clustered on the idea that simply any roof over one's head is not enough to ensure a basic threshold of quality of life.

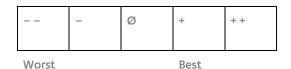
• Political feasibility: Finally, does the policy have the necessary political support and popularity to be implemented on a wide scale? Without this, the other criteria are moot.

Table 1 provides a guide to how each policy fares on these criteria.

Table 1: Policy/Criteria Matrix

		Model 1	Model 2a	Model 2b	Model 3	Control
Program		A Place for You	Second Dwelling Unit Pilot Program	Accessory Dwelling Unit Program	Backyard Homes Project and fee waivers	LIHTC multifamily Housing
Implementor/Location		Multnomah County (Portland, OR)	Los Angeles County	City of Los Angeles	LA-Más and San Diego County	nationwide
	Cost- effectiveness		-	Ø	+	_
	Longevity					+
	Scalability		_	_	Ø	_
	Suitability for People Transitioning from Homelessness	Ø	+	+	+	Ø
Criteria	Political Feasibility	++	++	++	++	_

Key:



## **Cost-effectiveness**

#### Cost Estimates

ADU programs offer the promise of substantial cost savings. For a variety of reasons—restrictive zoning, steel tariffs, environmental review, and many more beyond the scope of this paper—traditional multifamily housing is increasingly costly to construct. In 2016, the Terner Center at Berkeley assessed that each unit in a 100-unit affordable housing project in California cost around \$425,000 to complete (Terner Center, 2018). This number has only grown since: according to an estimate from LA-Más' Alejandro Dobie-Gonzalez, a standard unit of affordable housing in Los Angeles today astoundingly runs between \$400,000 and \$600,000 each (Dobie-Gonzalez, 2019). A large part of this comes down to the price of land acquisition. In Los Angeles, land prices per square foot nearly tripled between 2000 and 2016 (Terner Center, 2018). While no silver bullet, reducing or eliminating land costs could potentially lower the price of building housing significantly.

The three ADU programs detailed herein do not require purchasing land. The units are built on land the homeowner already owns, and compensation is not required because the homeowner owns (or at least ends up owning) the ADU built on their land. This drives down the overall cost per unit—on top of savings that come from the fact that ADUs are sometimes smaller than traditional units and/or are created by rehabilitating pre-existing buildings. All told, one of LA-Más' studio ADUs costs, on the low end, \$100,000 to \$125,000 to build; its two-bedroom units can run up to \$250,000 (Dobie-Gonzalez, 2019). In an information packet given to prospective program participants, LA-Más boasts a starting price of \$115,000 for a ground-up studio, \$150,000-\$165,000 for a one-bedroom, and \$180,000-\$220,000 for a two-bedroom, depending on square footage (LA-Más, n.d. c). These figures probably underestimate the price, but perhaps not by too much. The L.A. County pilot, for instance, uses an estimate of between \$120,000 and \$180,000 per ADU, while the average cost of private ADU construction is around \$200,000 (Gonzalez, 2019). Likewise, actual figures from the completed Portland ADUs back up these numbers: their stick-built ADUs cost only \$133,391 each (Monahan, 2018). While the actual price varies by the specific conditions of the site, ADUs almost certainly cost less overall than multifamily affordable housing, per unit.

Proponents and makers of ADUs assert that they can be produced for even lower costs (Bazeley, 2018). Professors Anne Brown, Vinit Mukhija, and Donald Shoup advocate that owners convert existing outbuildings like garages to ADUs, costing \$60,000 to \$80,000 in Los Angeles (Brown et al., 2017). Optimistically, LA-Más claims a rehab cost as low as \$25,000 (LA-Más, n.d. a). Prefabricated, standardized units have likewise been offered as a cheaper, more scalable solution. Two of the four units in Portland were prefabricated, trucked in from off-site, and installed on a low-cost "pin foundation" that takes only three hours to install (Stephens, 2001 and Van Eck, 2019). Altogether, these units cost only \$78,000 (Van Eck, 2019).

However, these savings come with significant downsides. For one, Multnomah County reduced costs through a partial exemption from prevailing wage rules: only on-site work required prevailing wages, not off-site fabrication. Courts in California may not rule the same way, though, and labor leaders and stakeholders will not be pleased if the program appears to skirt wage rules. Second, the Portland homeowners who received prefabricated units were not happy with their (lack of) style and their long, narrow shape (necessary for them to be transported by truck) (Van Eck, 2019). Homeowner interest and buy-in will be necessary for the program to scale effectively, so unattractive prefabricated units may represent a significant impediment. Finally, while Brown, Shoup, and Mukhija's estimates may be accurate for garages in good condition, both Mukhija and LA-Más note that many garages cost far more to rehabilitate (Brown et al., 2017; Mukhija, 2019; LA-Más, n.d. d). Rehab may cost almost as much as a ground-up build if the garage has an unsound foundation—a frequent occurrence (Mukhija, 2019).

Thus, while prefabrication and garage conversion can potentially reduce costs slightly, the downsides and caveats add up. Consequently, my analysis of the program sticks with the initial costs above.

## **Construction Costs Compared**

Importantly, these top-line numbers fail to account for the fact that the ADUs pilots only require five to ten years of renting to low-income tenants. Meanwhile, LIHTC nationally requires a thirty-year covenant to maintain affordability (PD&R, 2012). Therefore, in order to provide the same amount of affordable housing over thirty years as multifamily projects, the county will need to build and pay for three times as many ten-year restricted ADUs. In other words, a fairer comparison between costs is to look at the cost per unit per year of affordability. Table 2 outlines the public subsidy, homeowner costs, and total price per unit per year. The calculations assume that an ADU in Los Angeles costs \$150,000 to build, the average of the values L.A. County uses—an optimistic, charitable estimate (Gonzalez, 2019). The results show that ADUs may not be as cost-effective as they appear. The Portland ADUs, both prefabricated and stick-built, cost more per year than multifamily housing. The stick-built ADUs are particularly unsustainable. Steve Van Eck of the Multnomah Idea Lab noted that the program costs per year would drop if the required term were extended, but in focus groups, homeowners objected to a requirement of longer than five years (Van Eck, 2019). Meanwhile, the Los Angeles comparisons have lower annual public subsidies, but only because of significant homeowner outlays. By total cost per year, they rank worse than traditional affordable housing. Of course, it may not be entirely fair to divvy up private expenditures by year in the same manner as public subsidies, as they can be amortized over a longer period. But the point stands that, with only five to ten years of affordable renting required, ADUs' comparative cost savings either disappear or rely heavily on homeowner contributions that may not materialize en masse.

<sup>1.</sup> In California, affordability covenants are 55 years (CTCAC, 2018). Both for generalizability and in keeping with models used by development experts like Joan Ling (2018), I use a 30-year period for LITHC calculations in this paper; using a 55-year period would produce lower costs per year of affordability.

**Table 2:** Construction Cost per Unit per Year of Affordability<sup>2</sup>

Program	Years of Affordability	Public Subsidy per Year	Total Homeowner Costs	Combined Costs per Year
L.A. City ADU Pilot, Low Subsidy³	5	\$2,000	\$140,000 total	\$30,000
L.A. City ADU Pilot, High Subsidy <sup>2</sup>	3	\$6,667	\$130,000 total	\$50,000
L.A. County ADU Pilot <sup>2</sup>	10	\$7,500	\$75,000 total	\$15,000
Traditional Multifamily Housing <sup>4</sup>	30	\$14,167	N/A	\$14,166
Portland, Prefabricated ADUs	5	\$15,600	N/A	\$15,600
Portland, Stick- built ADUs	5	\$26,678	N/A	\$26,678

(Taheri, 2019; Gonzalez, 2019; Turner Center, 2018; Van Eck, 2019; and Monahan, 2018)

## Costs of Scaling Los Angeles County's Program

On top of construction, how do the additional cost of rental vouchers and the prospect of scaling up affect the programs' financial feasibility? Long-term, the City of Los Angeles hopes to expand its pilot to 500 units, ten percent of the eligible parcels (Taheri, 2019). For the sake of argument, I will assume that the county plans to expand to the same number of units. If the program framework stays the same, 500 new ADUs would cost \$37.5 million in public subsidy for construction. Additionally, the county would need to spend \$46.4 million in today's

<sup>&</sup>lt;sup>2</sup>. Assuming new construction, not rehabilitation

<sup>&</sup>lt;sup>3</sup>. Assuming a total ADU construction cost of \$150,000

<sup>4.</sup> Assuming the whole project is funded through public sources, like LIHTC and state soft loans

dollars on voucher payments. In total, the program would cost \$83.9 million, representing 7.0 percent of the county's Measure HHH bond and delivering 8.3 percent of the measure's 10,000 unit goal (Chiland, 2018a). These assumptions are generous, given the extra costs of supportive services, the deep poverty of many program tenants, and the fact that rents will likely increase more than inflation and incomes less than inflation. Moreover, using HHH's goal of 10,000 units counts ten-year restricted ADUs and thirty-year restricted LIHTC units the same, which is questionable. All told, the program would cost a fair amount if scaled up. It depends on optimistic assumptions to stand any chance of being more cost-effective than multifamily affordable housing.

# Longevity

ADU programs would become significantly more cost-effective if homeowners continued to rent to at-risk or previously homeless tenants after the program term ended. Governments would not need to incur one-time construction costs repeatedly, though they would still need to pay for rental vouchers. Yet the homeowners in the Portland and Los Angeles pilots do not have incentives to continue renting their units affordably. In part, larger market forces and structural deficiencies of vouchers are at play. But also, the programs themselves have features that encourage market-rate renting after the term ends. For both reasons, the ADU programs will fail to provide long-term affordable housing to the same degree as thirty-year LIHTC developments.

In theory, the rental income from vouchers should equal market rents, leaving no reason to switch away after program term. In a tight housing market like Los Angeles, though, actual rents far exceed what the federal government calculates as "fair market rents." In Los Angeles County, Section 8 rates fall 37 percent below the median one-bedroom rent. As a result of this and of the inspections and paperwork required, 76 percent of Los Angeles landlords do not accept Section 8 (L.A. Times Editorial, 2019 and Cunningham, 2018). Of course, the program homeowners will be used to accepting vouchers and dealing with voucher requirements after five to ten years of the program. Nonetheless, higher rents and a chance to escape the strictures of vouchers will draw away most homeowners at the end of the term.

The programs themselves do little to encourage continued affordable renting. The City of Los Angeles pilot, for instance, may build larger ADUs designed for shared housing (Taheri, 2019). These more spacious units not only will fetch more on the open market but also may be large enough for the homeowner to move in themselves and rent out the main house instead (Dobie-Gonzalez, 2019). Indeed, one participant in the county pilot plans to build a two-story ADU fit to live in as a spacious primary home (Gonzalez, 2019). Other program participants plan to have family members move into the ADU as soon as possible (Dobie-Gonzalez, 2019). And compared to the Los Angeles programs, the Portland pilot is even less amenable to continued affordable renting, as the homeowner receives no rent nor voucher payments and thus has no incentive to continue. Van Eck confirmed that the Idea Lab has no plans to extend leases after five years (Van Eck, 2019). In fairness, City of L.A. staff are considering offering an option to renew leases, presumably with some additional incentive attached (Taheri, 2019). Still, the prospects of homeowners continuing to rent to formerly homeless tenants are low.

Kiana Taheri of Mayor Garcetti's Chief of Staff's office told me that the pilot will be a success, in terms of longevity, if program tenants end up being able to pay market rent after five years. She noted that city staff will in

<sup>&</sup>lt;sup>5</sup>. A net present value assuming ten years at the Section 8 one-bedroom rate (\$1,522 per month) (LA-Más, n.d. d), tenants

with extreme low incomes (30 percent of the area median, or \$27,790 per year) (LA-Más, n.d. d), a discount rate equal to the ten-year yield-to-maturity on Measure HHH's bonds (2.85%) (Neighborly, 2017), and inflation on rents and incomes equal to the Federal Reserve Bank of Cleveland's ten-year expected inflation rate (1.97% per year) (Federal Reserve Bank of Cleveland, 2019); all vouchers are assumed to pay the maximum amount per these calculations.

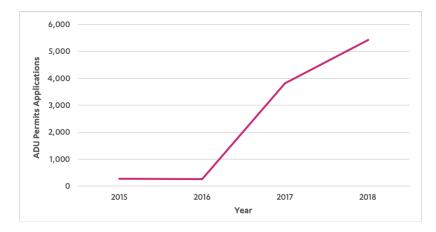
fact consider the likelihood of this happening when selecting tenants. I discuss below how likely this outcome actually is. But even if it does happen, it still means one fewer income-restricted unit on the market every time a program lease ends. Even so, Taheri also argued that even a market-rate ADU will rent for less than most units, given its smaller size, lack of parking, etc. In other words, the program will provide long-term benefits by expanding the region's overall affordable housing stock (Taheri, 2019). However, ADUs nested in single-family neighborhoods often come with price-upping amenities like good school districts. This proved the case in Portland, where a survey found that 80 percent of all ADUs rent at market rates or higher (Palmeri, 2014). Given the hot market for housing in urban California today, policymakers should not count on ADUs to rent affordably here either, after the program term.

# **Scalability**

ADU programs can only provide the same long-term benefits as LIHTC if they can scale up. Widespread ADU construction to house those now experiencing homelessness could in theory significantly ameliorate the region's homelessness crisis. Though ADUs in small numbers likely will not rent affordably after their program terms, in large numbers they could drive down rents by increasing supply overall. These benefits depend, of course, on the ability of ADU pilots to feasibly expand. The cost-feasibility of scaling up, discussed above, presents one major issue. Based on the programs' current structure and performance, I foresee other growth challenges as well. However, ADU programs do fare better on this criterion than on the previous two.

ADUs have incredible potential. Nearly half of the City of Los Angeles is zoned for single-family housing, representing 500,000 homes (Chiland, 2018c and Carpenter, 2018). Setting aside the question of upzoning—an important discussion beyond the scope of this paper—these single-family neighborhoods offer a tremendous short-term land bank to construct housing. Homeowners are already taking advantage. Since the state legalized ADUs under standardized, permissive rules at the start of 2017, the number of ADU permit applications has grown dramatically (Carpenter, 2018; Chiland, 2017; and Glesne, 2018). The City of Los Angeles received over 5,400 ADU applications in 2018, more than a twenty-one-fold increase from 2016 (*See Figure 1*) (Atkinson, 2018 and Atkinson, 2019). Mayor Garcetti hopes to harness this growth to house people experiencing homelessness, telling *LAist* that he would like to see 50,000 ADUs built under an expanded ADU/homelessness program (Carpenter, 2018). Perhaps more realistically, Taheri aims for 500 ADUs in the medium-term (Taheri, 2019).

Figure 1: Market-rate ADU Growth in the City of Los Angeles



(Atkinson, 2018 and Atkinson, 2019)

#### Homeowner Interest

On one hand, the county could achieve this number if homeowner interest continues at its current high rate. All three program contacts with whom I spoke mentioned the large volume of messages from homeowners about the pilots, many before the formal participant selection process began (Dobie-Gonzalez, 2019; Gonzalez, 2019; Taheri, 2019; and Van Eck, 2019). When that opened, L.A. County received 500 applications; Portland got 1,100. On the other hand, interest partially faded as staff informed initial applicants of the details. L.A. County dropped to 200 applicants in their second stage. Some homeowners stopped responding; others proved ineligible because they did not live in unincorporated county land (Some applicants even had houses that straddled the border!). In Portland, only 200 households are still interested in the program today. Even after selecting participants, L.A. County saw two of the initial six homeowners drop out. The programs require background checks and landlord training, which may also dissuade some applicants (Dobie-Gonzalez, 2019; Van Eck, 2019; and Gonzalez, 2019). A program like the City of L.A.'s, with its far lower subsidies, will likely receive even less long-term interest. Therefore, while many eager applicants will still join scaled-up versions of the current pilots, goals like Garcetti's seem wildly unrealistic.

#### Permitting

The permit streamlining element of the pilots offers both hope and pessimism. Having staff fill out and submit the (often onerous) permit applications, as in L.A. County and Portland, will greatly enhance the appeal of the program (Gonzalez, 2019 and Van Eck, 2019). In fact, a number of program applicants so far have admitted that the pilots are an easy way for them to get their previously unpermitted ADU legalized and revamped. As the programs grow, notes LACDC's Ernesto Gonzalez, the permit process should work better: staff can bundle permits and will become accustomed to processing them. The thousands of applications for market-rate ADUs since the state's reforms have already made cities like Los Angeles better at handling them (Gonzalez, 2019 and Dobie-Gonzalez, 2019).

Yet, the current state of permitting portends growing pains to come. Gonzalez cited permitting as the most challenging aspect of the program so far, recalling the delays and confusion the program has faced. LACDC is in charge of the ADU pilot, but they must apply for permits from the host of uncoordinated approval agencies just like any other private applicant. Fire sprinkler permits have proven most difficult to secure. Delays have mounted so much that one participant paid for an on-site test out of pocket just to speed up the process (Gonzalez, 2019).

But hiring additional program staff to shepherd permits along will increase overhead costs. Of course, LIHTC developments face permitting difficulties and delays with regularity, so the pilots' issues seem par for the course (Ling, 2018). Yet LIHTC only requires one set of permits for the dozens or hundreds of units on each site, while each single-unit ADU will need its own set of applications and approvals.

#### **Tenant Selection**

Selecting tenants may also prove a problem if the program grows. In Portland, homeowners had no say in who lived in their ADU. According to Van Eck, this turned off many potential participants (Van Eck, 2019). In the L.A. County pilot, tenants and homeowners engaged in a matchmaking process. One woman requested a female tenant for her ADU in the basement of her home, citing safety reasons (Gonzalez, 2019). While this veto power might expand the number of interested homeowners, it also raises worries about racial, ethnic, sexuality, and family-size biases. Tenant-landlord matching also requires individualized staff attention that may prove difficult to scale. More broadly, a system which private landlords—even the well-meaning ones who sign up—have a veto over tenants in a public program raises many thorny issues, to say the least. Preferences for certain types of tenants may even run afoul of anti-discrimination housing laws. Perhaps program staff can work out a middle ground—for instance, county staff could take landlord preferences into consideration but not as determinative. Either way, the issue of tenant selection poses minefields for a larger ADU program.

#### Scalability Compared to LIHTC

That said, LIHTC housing has its own scalability problems. Only 42 percent of applicant projects in California received competitive tax credits over two rounds of funding last year (CA State Treasurer's Office, 2019a). Experts like developer Joan Ling are worried that LIHTC credits from tax-exempt bonds, normally a non-competitive alternative, may also become competitive: the state is nearing its annual limit on such bonds (Ling, 2018 and CA State Treasurer's Office, 2019b). ADU programs may therefore have more potential for growth than LIHTC. But reaching that potential—hundreds or thousands of units in the county's vast swaths of single-family land—will require surmounting many difficult obstacles.

# **Suitability for People Transitioning from Homelessness**

The county has a duty to provide a baseline standard of living for the homeless, which means more than just a roof and walls. If the space is too crowded or the conditions lead to later returns to homelessness, the program will not have done its job. On this metric, LIHTC performs well. For starters, Robert Clifford and Osborne Jackson find that more LIHTC housing of all types leads to lower rates of homelessness in an area (Clifford and Jackson, 2017). In particular, supportive housing with on-site services, funded by LIHTC, aids its residents. A literature review by Ehren Dohler et al. finds that supportive housing reduces public homeless service costs, decreases medical visits among tenants, and keeps people housed long-term. For instance, in the studies Dohler et al. survey, over half of formerly homeless residents with severe mental illnesses remained in supportive housing after five years (Dohler et al., 2016). Supportive housing works by collecting services in one place and achieving economies of scale.

Before examining whether ADUs offer the same benefits, it is worth asking whether ADUs are even large enough to provide adequate housing. A family may have trouble fitting in an ADU of only 280 square feet, the size of Portland's stick-built units (Van Eck, 2019). While Portland's units do run small, I nonetheless do not foresee overcrowding as an issue. For one, L.A. County's ADUs will average a more comfortable 600-900 square feet, with the smallest at 512 (Gonzalez, 2019). The City of Los Angeles, as mentioned above, also plans to build

larger units designed for multiple occupants. Regardless of the average size, staff in charge of tenant selection for all the programs are placing the appropriate number of people in each unit (Taheri, 2019).

With adequate sizes established, ADU/homelessness programs appear to provide their residents similar benefits and stability as LIHTC supportive housing—or better. These improvements stem from ADUs' scattered sites, generally amidst safer suburbs with better amenities, etc. In a randomized study conducted by Vicky Stergiopoulos et al., a higher proportion of homeless adults with mental illnesses stayed stably housed in scattered sites with services than in traditional supportive housing. Service costs also fell by 30 percent, though quality of life, as measured by a questionnaire, did not improve (Stergiopoulos et al., 2015). Leyla Gulcur et al. likewise find that scattered-site housing improves social integration of formerly homeless tenants with mental illnesses (Gulcur et al., 2007). Van Eck suggested that ADUs allow tenants to build social capital in their new neighborhoods (Van Eck, 2019).

Nonetheless, the effects of scattered-site housing are far from definitive. Take Moving to Opportunity: a large, national study that gave public housing residents Section 8 vouchers to live in low-poverty neighborhoods. While it concerned neither ADUs nor homelessness, Moving to Opportunity represents the most significant look at the effects of moving to dispersed, higher-income locations. The program did result in better health outcomes, better perceptions of safety, and more social ties across incomes. On the other hand, participants had similar educational outcomes, arrest records, employment rates, and incomes as the control group (Sanbonmatsu et al., 2011). By implication, ADU/homelessness programs may have some positive effects on quality of life, but they likely will not improve tenants' economic nor educational prospects.

Many of their benefits stem from the type of tenants selected. ADU/homelessness programs do not serve the same high-needs population as LIHTC supportive housing: in all three ADU programs, staff are selecting tenants with less need for services (Dobie-Gonzalez, 2019; Van Eck, 2019; and Taheri, 2019). This is not a criticism per se; each person experiencing homelessness should ideally live in the location that suits them best. But for this reason and this reason alone, the cost of supportive services for the ADU program will be low, despite the price of servicing many sites. The most costly-to-support residents will remain in conventional supportive housing. Thus, the program is not suited for the broadest range of homeless tenants.

# **Political Feasibility**

None of the above matters if ADU programs are not politically feasible. Put simply, elected officials will not vote to expand the pilot if they fear homeowner backlash. As William Fischel argues, most homeowners act as "homevoters": they zealously protect their home values, expressed as fears about safety, school quality, etc., through political organizing and voting (Fischel, 2002). Will ADU programs that house the homeless in these powerful constituents' literal backyards provoke a negative reaction?

The Portland and Los Angeles pilots have instead proven popular. The "win-win" messaging practically writes itself. Homeowners and communities can act generously and help solve a pressing regional issue, all the while building the equity of their own property. The programs do not concentrate low-income tenants in any one location, which neighbors might perceive as lowering home values. Nor do they involve rezoning or other highly visible changes to the built environment. Van Eck found public sentiment towards the program quite positive, with a widespread recognition that something needed to be done about the region's homelessness crisis (Van Eck, 2019). In Los Angeles, Taheri "anticipated a lot more backlash than we [received]," and advocate groups proved effective in demonstrating and rallying community support (Taheri, 2019). Dobie-Gonzalez, who has worked with many neighborhood councils on ADUs, finds them generally receptive. The only significant opposition he has

observed is indirect: complaints at City Hall hearings about less available parking, increased congestion, and worse hillside danger during fires (Dobie-Gonzalez, 2019). But this backlash appears far more muted than with most other housing projects, public or private.

Meanwhile, LIHTC construction involves a host of approvals and environmental review steps that serve as opportunities for community opposition and delay. Proposition 13's property tax rules "structurally [incentivize]" "current residents...to oppose newcomers," according to Paavo Monkkonen and Will Livesley-O'Neill, who point out the many mechanisms by which neighbors can do so (Monkkonen and Livesley-O'Neill, 2019). Under the new state rules, ADUs can sidestep many of these. The only change I might recommend on the political front is to expand eligibility to at-risk and underhoused tenants, not merely the currently homeless, as suggested by Mukhija (Mukhija, 2019). This larger pool of tenants may prove even more politically palatable, without weakening the core goals of the program.

Yet the program's popularity could itself prove a political downside. Elected officials and decisionmakers only have so much political capital to spend and advocate energy upon which to draw. If this finite backing goes towards supporting ADU program expansion, future policymakers may find it harder to muster support for other, more effective policies. In fact, some elected officials may claim that a scaled-up ADU program is impactful enough on its own and may then oppose further action.

## Recommendation

## Be Skeptical of Scaling Up

Based on its performance on the metrics above, I recommend against—or at least suggest a fair bit of skepticism of—expanding ADU pilots in their current form. These programs will cost more than LIHTC housing, per year of affordability, and/or rely on substantial homeowner financial contributions that may not materialize at scale. The programs are not structured for longevity: homeowners do not have incentives to continue to rent to program tenants. Tenant selection, permitting, waning sign-up interest, and more will all prevent the programs from growing to meet their admittedly large potential. The programs may advance tenants' quality of life but likely will not improve incomes, education, or other stabilizing factors, as compared to traditional low-income housing. The programs' popularity does not make up for these shortcomings.

#### A Better Alterative

Despite the specific problems of Los Angeles and Portland's ADU pilots, ADUs can still help fight homelessness to some degree. Instead of expanding the current pilot, I instead recommend incentives for affordable ADUs other than direct subsidies. A modified program could house selected tenants in ADUs built on the private market, without government assistance. The county would still need to provide rental vouchers, as with any other Section 8 housing arrangement (and should advertise the program to eligible tenants and help them apply). But homeowners will build and fund the units themselves. Such a program would clearly be cost-effective from the government's perspective and could scale as market-built ADUs multiply. Below, I describe how such a program might work.

According to Dobie-Gonzalez, the most significant challenge for ADU construction is that mainstream banks do not currently offer mortgage products for second units. Permitted ADUs are still rare nationally and difficult to appraise, meaning that banks hesitate to lend against them. Homeowners who already have a primary mortgage on their home will need to take out a second mortgage or a cash-out refinancing plan, both of which are often

risky or come with unfavorable terms (Dobie-Gonzalez, 2019; Peterson, 2013; and Chiland, 2018b). To help fix this problem, LA-Más launched the Backyard Homes Project, a private initiative separate from their work on the county pilot. Under Backyard Homes, LA-Más provides design and permitting assistance for homeowners who build an ADU to house a Section 8 tenant. Four to six homeowners will receive financing from Genesis LA and the Self-Help Federal Credit Union, community lenders willing to try out new loan vehicles to support affordable housing. The philanthropic arms of Chase and Wells Fargo have donated to the project, perhaps as the first step in offering similar loan products of their own. In fact, LA-Más' goal is not to scale up per se but rather to pilot private ADU loans and to prove that Section 8 requirements can be met in a fast and manageable manner (Dobie-Gonzalez, 2019 and LA-Más, n.d. b).

Instead of a costly direct-subsidy program, the county should foster market ADU loans in a similar way. Backyard Homes focuses on Section 8 more generally, so the county or cities could replicate it to specifically house homeless or at-risk tenants. Without direct construction subsidies, this would cost the government little. Of course, the county and municipalities can only do so much to make the private mortgage market warm up to ADUs. But if and when that happens, homeowners will likely invest in ADUs for the home equity boost alone. The county and cities can then jump on the trend and house homeless tenants in these market-built ADUs.

To do so, governments can waive fees on participating ADUs. For a model, San Diego County recently eliminated permit and impact fees for all ADUs. L.A. County or City could modify this idea: instead of waivers for all ADUs, the county or city could eliminate permit and impact fees only for homeowners who agree to house a program tenant. The county or municipalities could then waive additional fees as well; in San Diego County, for instance, ADU-builders still face a plan-review fee of about equal cost (Johnson, 2019 and County of San Diego Planning and Development, 2018). As LACDC's Gonzalez suggests, the county or cities could also provide the same coordinated "spot checks" to affordable ADU-builders as many do for certain developers, wherein every approval department reviews the plans at once and provides feedback and guidance (Gonzalez, 2019). "Concierge" permitting and fee waivers represent a substantial incentive for homeowners to rent out an ADU they were already building to a homeless tenant. In fairness, the City of L.A. considered a somewhat similar proposal but concluded that homeowners required more "seed money" than fee waivers alone (Taheri, 2019). But if commercial banks begin offering mass-market ADU mortgages, many homeowners will be able to build ADUs on their own, taking a fee waiver later as an additional but not necessary incentive.

Adding fee waivers atop private ADU loans is a more sensible route for L.A. County or its cities to follow. This method certainly involves trade-offs: less certainty over ultimate unit numbers, less control of the program details, and possibly fewer people housed in ADUs specifically. That said, instead of paying homeowners to build ADUs—a cost-ineffective use of taxpayer dollars—Southern California governments could use their funds on other homeless housing initiatives. These traditional affordable housing projects, combined with the market-built ADUs described above, will house more people currently facing or risking homelessness for a longer time, for the same cost.

# **Bibliography**

Atkinson, A. (2018, November). *Housing Progress Report*. Retrieved from https://planning.lacity.org/Documents/ExternalAffairs/HousingProgressRpt/Q3\_2018/Q3.pdf.

Atkinson, A. (2019, February). *Housing Progress Report*. Retrieved from https://planning.lacity.org/Documents/ExternalAffairs/HousingProgressRpt/2018 Q4.pdf

Bazeley, A. (2018, July 24). New Prefab Home Can Be Yours for Under \$100K: Featuring Plenty of Customization. *Curbed*. Retrieved from https://www.curbed.com/2018/7/24/17604904/prefab-home-livinghomes-adu-tiny-house.

Barnett, E. (2018, September). How Backyard Cottages Could Help Seattle's Homeless Problem: Through the Block Project, One Seattle Family Is Opening Its Heart—and Its Backyard—to a Homeless Man. *Seattle Magazine*. Retrieved from https://www.seattlemag.com/news-and-features/how-backyard-cottages-could-help-seattles-homeless-problem.

Bloomberg Philanthropies, Mayor's Challenge (2018). 2018 Champion City: Los Angeles, CA: 2018 Winner; Tackling Homelessness One Small Dwelling at a Time. Retrieved from https://mayorschallenge.bloomberg.org/ideas/los-angeles/.

Brown, A., Mukhija, V., and Shoup, D. (2017). Converting Garages into Housing. *Journal of Planning Education and Research*, 1-13. Retrieved from https://journals.sagepub.com/doi/pdf/10.1177/0739456X17741965.

Carpenter, S. (2018, October 31). Mayor Garcetti Is Hoping This Program Will Create 50K Homeless Housing Units in Angelenos' Backyards. *LAist*. Retrieved from https://laist.com/2018/10/31/la\_adu\_program.php.

California State Treasurer's Office (2019a). Application Information. Retrieved from https://www.treasurer.ca.gov/ctcac/2018/application.asp.

California State Treasurer's Office (2019b). What Are Bonds and Why Are They Used? Retrieved from https://www.treasurer.ca.gov/CDLAC/bonds.asp.

California Tax Credit Allocation Committee (c. 2018). California Tax Credit Allocation Committee Program Overview. Retrieved from https://www.treasurer.ca.gov/ctcac/program.pdf.

Chiland, E. (2017, January 9). New State Rules Make It Easier to Build In-Law Units in Los Angeles: But Stricter Local Regulations Might Be on the Way. *Curbed Los Angeles*. Retrieved from https://la.curbed.com/2017/1/9/14219298/granny-flats-new-rules-state-back-house-in-law.

Chiland, E. (2018a, April 13). When Will L.A.'s Big Homelessness Strategy Start Paying Off?: Some Advocates Are Growing Impatient. *Curbed Los Angeles*. Retrieved from https://la.curbed.com/2018/4/13/17229430/los-angeles-homeless-strategy-measure-h-results.

Chiland, E. (2018b, May 29). What to Know about ADUs in Los Angeles: These Small Residences Could Help Solve California's Housing Shortage. *Curbed Los Angeles*. Retrieved from https://la.curbed.com/2018/5/29/17381808/adu-los-angeles-meaning-requirements-california.

Chiland, E. (2018c, September 2018). Single-family Homes Cover Almost Half of Los Angeles—Here's How That Happened: For Better or for Worse, L.A.'s Image Is a City of Ranch Homes and Craftsman Bungalows. *Curbed Los Angeles*. Retrieved from https://la.curbed.com/2018/9/10/17827982/single-family-houses-los-angeles-zoning-rules-explained.

Clifford, R. and Jackson, O. (2017, September 7). Can Subsidized Housing Help Address Homelessness in New England? Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3031191.

Cunningham, M. et al. (2018, October). Do Landlords Accept Housing Choice Vouchers?: Findings from Los Angeles, California. Retrieved from

https://www.urban.org/sites/default/files/do\_landlords\_accept\_housing\_choice\_vouchers\_los\_angeles.pdf.

Dobie-Gonzalez, A. (2019, February 12). Telephone interview.

Dohler, E., Bailey, P., Rice, D., and Katch, H. (2016, May 31). Supportive Housing Helps Vulnerable People Live and Thrive in the Community. Retrieved from https://www.cbpp.org/sites/default/files/atoms/files/5-31-16hous.pdf

Federal Reserve Bank of Cleveland (2019, February 13). Inflation Expectations. Retrieved from https://www.clevelandfed.org/our-research/indicators-and-data/inflation-expectations.aspx.

Fischel, W. (2002). The Homevoter Hypothesis: How Home Values Influence Local Government Taxation, School Finance, and Land-use Policies. London: Harvard University Press.

French, M. (2018, June 4). Wrapping up "A Place for You" ADU Pilot. Retrieved from https://enhabit.org/adus/wrapping-up-a-place-for-you-adu-pilot/.

Glesne, M. (2018, May). Accessory Dwelling Unit Ordinance: Background and Frequently Asked Questions. Retrieved from https://planning.lacity.org/ordinances/docs/ADU/faq.pdf.

Gonzalez, E. (2019, February 11). Personal interview.

Gulcur, L., Tsemberis, S., Stefancic, A., and Greenwood, R. (2007, June). Community Integration of Adults with Psychiatric Disabilities and Histories of Homelessness. *Community Mental Health Journal*, *43*(3), 211-228. Retrieved from https://link.springer.com/content/pdf/10.1007%2Fs10597-006-9073-4.pdf.

Johnson, A. (2019, January 9). Board of Supes Waive Permit Costs, Fees for "Granny Flats" for Next Five Years to Address Housing Shortage. *NBC 7 San Diego*. Retrieved from https://www.nbcsandiego.com/news/local/accessory-dwelling-units-granny-flats-board-of-supervisors-waive-fees-permits-504127101.html.

LA-Más (n.d. a). *Backyard Homes: Build Home Equity + Increase Affordable Housing*. Retrieved from https://static1.squarespace.com/static/5840c42cf5e2310b848ee53a/t/5aeba866352f53290db852b9/1525393538492/ADU+LIS C+Focus+Group+%286%29.pdf.

LA-Más (n.d. b). *The Backyard Homes Project*. Retrieved from https://static1.squarespace.com/static/5840c42cf5e2310b848ee53a/t/5c75e5557817f7c9da2c7028/1551230295867/LA-Ma%CC%81s\_BackyardHomes\_OnePager\_02.20.19.pdf.

LA-Más (n.d. c). The Backyard Homes Project: Homeowner Design Package, Floor Plans + Unit Details.

LA-Más (n.d. d). The Backyard Homes Project: Program Booklet. Retrieved from https://static1.squarespace.com/static/5840c42cf5e2310b848ee53a/t/5c106e6db8a045162a032ce3/1544580720573/LA-Ma%CC%81s\_BYHomes\_Booklet\_12.11.18.pdf.

Los Angeles Homeless Services Authority (2013, August 20). 2013 Greater Los Angeles Homeless Count: Overall Results for Los Angeles County and Los Angeles Continuum of Care. Retrieved from https://documents.lahsa.org/planning/homelesscount/2013/HC13-Results-LACounty-COC.pdf.

Los Angeles Homeless Services Authority (2018, May). 2018 Greater Los Angeles Homeless Count—Data Summary: Los Angeles County. Retrieved from https://www.lahsa.org/documents?id=2001-2018-greater-los-angeles-homeless-count-los-angeles-county.pdf.

[Los Angeles] Times Editorial Board (2019, January 30). It's Already Hard to Get a Section 8 Voucher. It's Even Harder to Find a Landlord Willing to Take It [editorial]. Los Angeles Times. Retrieved from https://www.latimes.com/opinion/editorials/la-ed-section-8-discrimination-ban-20190130-story.html.

Ling, J (2018, October 3-December 5). Affordable Housing Development [course lectures].

Monahan, R. (2018, September 11). Four Previously Homeless Families Are Now Housed in Tiny Backyard Cottages in Portland: As KOIN-TV First Reported, the Project to House Families in Backyard Cottages Has Come to Fruition. It Took a Year Longer than Expected and Came in over Budget. *Willamette Week*. Retrieved from https://www.wweek.com/news/city/2018/09/11/four-previously-homeless-families-are-now-housed-in-tiny-backyard-cottages-in-portland/.

Monkkonen, P. and Livesley-O'Neill, W. (2019, February 8). Overcoming Opposition to New Housing. Retrieved from https://www.lewis.ucla.edu/2019/02/08/overcoming-opposition-to-new-housing/.

Mukhija, V. (2019, February 6). Personal interview.

Multnomah County (2018, September 13). "The Only Thing We Lacked Was a Home": A Place for You Pilot Project Houses Four Families. Retrieved from https://multco.us/multnomah-county/news/only-thing-we-lacked-was-home-place-you-pilot-project-houses-four-families.

Neighborly (c. 2017, June 27). City of Los Angeles General Obligation Bonds Series 2017-A (Taxable). Retrieved from https://neighborly.com/issuance/la-2017-series-a-and-b/investment-options.

Peterson, K. (2013, January 28). Finally, a Loan Product that Works for Constructing ADUs. Retrieved from https://accessorydwellings.org/2013/01/28/finally-a-loan-product-that-works-for-constructing-adus/.

Palmeri, J. (2014, June 1). Accessory Dwelling Units in Portland, Oregon: Evaluation and Interpretation of a Survey Of ADU Owners. Retrieved from https://www.oregon.gov/deq/FilterDocs/ADU-surveyinterpret.pdf.

P[olicy] D[evelopment] and R[esearch], [United States Department of Housing and Urban Development, Office of] ([2012, August 17]). What Happens to LIHTC Properties after Affordability Requirements Expire? *The Edge*. Retrieved from https://www.huduser.gov/portal/pdredge/pdr\_edge\_research\_081712.html.

Sanbonmatsu, L. et al. (2011, November). *Moving to Opportunity for Fair Housing Demonstration Program: Final Impacts Evaluation*. Retrieved from https://www.huduser.gov/portal/publications/pdf/MTOFHD\_fullreport\_v2.pdf.

San Diego, County of, Planning and Development Services (2018, June 29). *Building Construction Permit Fees: Building Division*. Retrieved from https://www.sandiegocounty.gov/pds/docs/pds613.pdf.

Stergiopoulos, V. et al. (2015, March 3). Effect of Scattered-Site Housing Using Rent Supplements and Intensive Case Management on Housing Stability among Homeless Adults with Mental Illness: A Randomized Trial. *Journal of the American Medical Association*, 313(9), 905-915. Retrieved from https://jamanetwork.com/journals/jama/article-abstract/2174029.

Stevens, T. (2001, July 12). New Pin Foundation Minimizes Site Impacts. *Daily Journal of Commerce, Environmental Outlook 2001*. Retrieved from https://www.djc.com/news/enviro/11123741.html.

Taheri, K. (2019, February 12). Telephone interview.

Terner Center for Housing Innovation, U[niversity of] C[alifornia] Berkeley (c. 2018). *Terner Center Research Series: The Cost of Building Housing*. Retrieved from http://ternercenter.berkeley.edu/uploads/Cost\_of\_Building\_Housing\_Series\_Framing.pdf.

Van Eck, S. (2019, February 26). Telephone interview.