Mitigating the Stress of Housing Instability: The Impact of Housing Choice Vouchers on Social Supports, Behavioral Health, and Criminal Legal Involvement

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Abstract

The Housing Choice Voucher program is the largest low-income housing subsidy program managed by the U.S. Department of Housing and Urban Development. Research shows that vouchers improve housing affordability and stability and access to higher quality housing units and safer neighborhoods. Yet little is known about how housing supports affect a household's health and well-being and contact with other social services, including safety net supports, behavioral health services, and the criminal justice system. To estimate the broader impacts of receiving a voucher, we leverage the random selection of voucher recipients and linked administrative data from eight agencies in Sonoma County, California. Where previous research on housing supports compares voucher recipients to control groups living in public housing, we compare households receiving vouchers to those not receiving them and remaining without public housing support.

Keywords: Housing Choice Voucher program; low-income housing; experiment

Introduction

California faces an ongoing housing affordability crisis, with housing costs far outpacing increases in housing supply, and many households facing housing instability and homelessness. Over half of California renters are rent-burdened (meaning they spend more than 30 percent of their total household income on housing), and the state is responsible for nearly 30 percent of the nation's homeless population (Abt Associates, 2023). High housing costs and housing instability further strain the financial security of low-income households, potentially pulling them deeper into poverty (Galvez, Brennan, Meixell, and Pendall, 2017). When facing a severe rent burden, households often cut back on other expenses, including food, childcare, education, transportation, and healthcare, or accept poor quality housing (Galvez et al., 2017; Cohen,

Wardrip, and Williams, 2010). Further, when cities experience rent burdens above 32 percent, homeless rates increase sharply (Glynn, Byrne, and Culhane, 2018). Therefore, when housing costs increase, individuals and households are more likely to need support from multiple social systems to get by. To combat these effects, housing assistance is a critical piece of the broader social safety net.

One piece of this safety net is the Housing Choice Voucher (HCV; formerly Section 8) program, the largest low-income housing subsidy program managed by the U.S. Department of Housing and Urban Development (HUD). The program provides financial support to recipients to secure a rental unit in the private market. Recipients pay 30 percent of their income towards rent, and the rest of the rent is paid through the voucher, up to the local maximum payment standard set between 90 and 110 percent of the Fair Market Rent (which is determined by local conditions) (Ellen, 2020). The program is targeted for low-income tenants: 75 percent of vouchers must go to extremely low–income households.

Research has shown that vouchers improve the housing outcomes of low-income households, improving housing affordability and stability and access to higher quality housing units and safer neighborhoods (e.g. Ellen, 2020; Lens, Ellen, and O'Regan, 2011). Yet we know relatively little about how housing supports like vouchers affect a household's overall health and well-being and reliance on other social services, including access to safety net supports, services for mental and behavioral health problems, and criminal justice system involvement. This information is critical, because individuals with mental illness, substance abuse, and/or chronic homelessness frequently cycle through the criminal justice, public health, and social service systems (Augustine and White, 2020).

To estimate these broader impacts of receiving a voucher, we leverage the random selection of HCV recipients and linked administrative data from eight county and state agencies administering social safety net programs, behavioral health services, housing services and supports, and the criminal justice system in Sonoma County, California. Importantly, where previous research on housing supports such as the Moving to Opportunity experiments compare voucher recipients to control groups living in public housing, we compare households receiving HCVs to those not receiving them and remaining without public housing support. This is the policy-relevant margin for decisions about how much the government should intervene in the low-income housing market.

We find very little evidence that voucher receipt affects access to social supports or behavioral health services, or involvement with the criminal justice system during the study period. We discuss some of the explanations for these null effects, including low pre-lottery levels of contact with the systems, low lease-up rates and long wait times for those who did lease up, and the dampening effect of the COVID-19 pandemic on support service access and criminal activity.

However, we do find meaningful effects for some subgroups. Hispanic individuals who won the housing lottery have larger declines in the number of substance use disorder services received than do Black non-Hispanic individuals. Additionally, Black individuals receiving vouchers are less likely to receive substance use services at all. For individuals who do not identify as Hispanic or Black, the voucher is associated with a marginally significant increase in the number of substance use services received. However, these individuals are also less likely to receive mental health services. We find statistically significant declines in the receipt and number of mental health services among seniors following a voucher offer. Seniors are also less

likely to enroll in TANF or receive housing support services following the voucher offer. Younger people were more likely to enroll in safety net benefits following a voucher offer. Females received fewer substance use services following the voucher offer, while males receive more substance services. Both groups receive fewer mental health services. The declines in criminal legal system contact are larger among male applicants.

Literature Review

The effects of housing cost burdens

High housing costs impact households in myriad ways. For most households, high housing cost burdens make it difficult to afford other necessary goods and services. At the extreme, these burdens lead to precarious housing conditions and even homelessness. In California, over two-thirds of people experiencing homelessness are unsheltered (de Sousa, et al., 2023). Once people experience homelessness, unsheltered or not, they are more likely to require services to address trauma or deteriorations in physical and mental health and are more likely to interface with the criminal justice system.

High housing costs can also cause housing instability through evictions, couch surfing, and doubling-up, and can prevent productive mobility (such as moving closer to job opportunities) thereby reducing employment or increasing commute times. The stress of housing instability can cascade into other facets of life (Kushel et al., 2023). Housing instability can result in diminished health outcomes for adults, including increased mortality (Chen, et al., 2022; Kushel, Gupta, Gee, and Haas, 2006; Polack, Griffin, and Lynch, 2010; Baker, Lester, Mason, and Bentley, 2020; Burgard, Seefeldt, and Zelner, 2012; Bradford and Bradford, 2020). Housing instability can also lead to changes in household composition, with particularly negative implications for children (Desmond and Perkins, 2016). Frequent housing instability is correlated

with deteriorating mental health (Kang, 2021). Eviction specifically can be a catalyst for material hardship, depression, stress, and negative health outcomes (Desmond and Kimbro 2015). These effects can spiral out of control, since individuals with existing mental health challenges, even less severe ones, are at greater risk of housing insecurity in the first place (Fallon, 2023).

All these negative effects likely mean that people who struggle to afford housing are more likely to seek or require various social services. Research on people experiencing homelessness makes this quite clear. Russell et al. (2021) find that youth experiencing homelessness are far more likely to be readmitted to a mental health inpatient ward than those who did not experience homelessness, up to a decade later. Szymkowiak et al. (2017) find that a small subset of veterans experiencing homelessness are "super-utilizers" of acute health care services. A recent and comprehensive survey of people experiencing homelessness in California (Kushel et al 2023) found that about 30 percent reported a jail stay while homeless, and 38 percent reported a visit to the emergency department in the prior six months - well over double the norm for the national population. However, research also finds that homeless individuals are less likely to access mental health and substance use care, conditional on their very high propensity for suffering from these challenges (Koegel et al., 1999). And Kushel et al (2023) also report that people experiencing homelessness do not access primary care as frequently as they should, given their propensity to have poor physical health.

Housing insecurity and housing cost burdens can increase the likelihood of criminal justice system involvement. Research is fairly conclusive that criminal justice system involvement (particularly incarceration) can make housing outcomes worse, and that those with precarious housing conditions are more likely to be arrested for crimes. Several studies (Jacobs and Gottlieb 2020; Lutze 2014) find that recidivism rates are lower for people who have their

housing needs met - that they have a home to return to when they leave prison. In the other direction of the relationship, criminal justice system involvement can be extraordinarily high for people experiencing homelessness. Gonzalez et al (2018) found that 76 percent of a large sample of adults in Oklahoma City homeless shelters reported being arrested at some time, and that 57 percent of the sample had been to jail more than three times. Some of these arrests and jail stays may be due to the criminalization of homelessness, but they are astounding numbers nonetheless. Because of the connections between precarious housing conditions and criminal justice system involvement, we anticipate that voucher receipt will be associated with fewer criminal justice system contacts.

The effects of housing voucher receipt

Increased housing stability is one likely outcome from housing supports, and changes in neighborhood are another. The Moving to Opportunity Demonstration Program (MTO) produced a voluminous literature on the effect of moving to low poverty neighborhoods on household well-being. A full summary of that literature is beyond the scope of this paper, but it is worth noting the specific outcomes that MTO is understood to have affected.

Between 1994 and 1998, MTO researchers and participating housing authorities in Baltimore, Boston, Chicago, New York and Los Angeles, enrolled over 4,600 low-income households living in public housing. The participants were randomly assigned to three groups - the Section 8 group that would receive a housing voucher; the experimental group that would receive a housing voucher that could only be used in a low poverty (less than 10 percent) neighborhood; and a control group who would not receive any new or additional services beyond what they were already entitled. The vast majority of households were interviewed at baseline,

four to seven years after baseline, and 10 to 15 years after baseline. They were also tracked in administrative records, as recently as 2016 (Chetty, Hendren and Katz 2016).

Studies of MTO participants looked for effects on several indicators of well-being, and this is well-summarized in Sanbonmatsu et al (2011). Participants in the experimental and Section 8 group had some mental and physical health improvements that might suggest we see differential access to mental health services. However, Pollack et al (2019) found no differences in rates of hospitalization, there were no positive findings on criminal justice system involvement or risk behaviors.

In MTO, the counterfactual was an existing housing support. In the current study, the counterfactual is often nothing - just a continued presence on the voucher waiting list. Thus, research that compares those receiving housing support to those getting none are particularly germane. Given the connections between housing stability, housing voucher receipt and broader indicators of well-being, we might see less contact with various other social support systems after people are connected to housing supports. For unsheltered homeless individuals, interactions with the criminal justice system are common, including frequent jail stays, and some use illegal substances as a coping mechanism and frequently interact with health systems (Kushel et al., 2023).

The Family Options Study (Gubits et al., 2018) also used random assignment to investigate the role of housing vouchers (and other housing interventions) on keeping people from experiencing further homelessness. From 2010 to 2012 over 2,200 families from 12 communities enrolled after spending at least seven days in emergency shelter. Families were randomly assigned to one of four groups: priority access to a long-term housing subsidy, typically a housing voucher; priority access to a short-term rapid re-housing subsidy; priority

access to project-based transitional housing; or the usual care control group. Assignment to the long-term subsidies intervention group more than halved most forms of residential instability, improved multiple measures of adult and child well-being, and reduced food insecurity. Further, providing families with these long-term subsidy options cost public agencies less than the control group, who frequently used temporary shelter and other costly emergency services at a high rate. Research on the broader population of housing voucher recipients finds that vouchers can improve the amount of space households have and the quality of housing units (Mills et al., 2006; Schwartz et al., 2017).

The At Home/Chez Soi evaluation specifically tested the efficacy of the housing first model in keeping people experiencing homelessness housed and improving mental health and other outcomes that disproportionately affect them. From 2009 to 2013, 2,148 individuals in five Canadian cities were randomly assigned to receive either housing first or treatment as usual. The housing first group reported significantly better housing outcomes. However, mental health and substance use outcomes were about the same across both groups at follow up. Importantly for this study, the housing first group had larger declines in emergency room and outpatient health visits than the treatment as usual. There was no difference between the two groups in the decline in justice system involvement.

Other research supports the notion that housing voucher receipt can increase housing stability, but the evidence is mixed on whether that stability reduces the likelihood of experiencing other negative outcomes. Receiving a voucher lessens household rent burdens and can help prevent homelessness (Ellen, 2020). An experimental study of the Welfare-to-Work voucher program found that recipients spent less per month on rent and utilities, and more on food, than the control group (Mills et al., 2006). Further, the study showed that vouchers

drastically reduced the probability that recipients experienced homelessness. A second voucher lottery experiment in Chicago found that recipients reduced the share of their income spent on rent from 58 percent to 27 percent (Jacob & Ludwig, 2012). Jacob and colleagues (2015) find very little evidence that receiving vouchers through a housing lottery influences child health and schooling outcomes or criminal justice system involvement.

While housing vouchers can make it easier for recipients to afford other necessities, the net effect on service utilization is ambiguous for at least two key reasons. First, while we know that people experiencing homelessness disproportionately access emergency services, other people experiencing housing instability might be less likely to address other challenges, because they are in a housing crisis. In other words, households connected to housing support may be more likely to connect to other social safety net services and benefits for which they are eligible, as they have more capacity to navigate various systems now that housing is secured. Second, housing subsidy receipt can impact earned income in different ways. There is inconsistent evidence on the impact of receiving a voucher on income and earnings, with some studies finding positive effects on earnings (Andersson et al., 2016) and others finding reductions (Jacob & Ludwig, 2012; Mills et al., 2006; Chyn et al., 2019). If voucher receipt reduces earned income, recipients may qualify for other benefits as well.

Empirically, there is some evidence that vouchers increase participation in social supports, such as Temporary Assistance for Needy Families (TANF) (Jacob & Ludwig, 2012), Medicaid, and the Supplemental Nutrition Assistance Program (SNAP) (Chyn et al., 2019). Vouchers have been found to lower overall incarceration rates among recipients (Andersson et al., 2016), although effects differ by gender (Kling, Ludwig, & Katz, 2005).

The direction of the effects of housing supports on the receipt of services for mental health and substance use diagnoses are also not clear. More stable and affordable housing may lead individuals to seek help for disorders that had previously gone untreated, increasing the frequency and cost of that care (the theory behind the Housing First model; see Woodhall-Melnik and Dunn, 2015). On the other hand, improved housing conditions may enable individuals to manage their conditions or diagnoses more effectively, resulting in less frequent use of intensive in-patient treatments.

Programs that improve housing stability may play an important role in disrupting the cycle of incarceration that many of the highest need individuals experience. As Andersson et al. (2016) found, children and young adults in voucher-assisted housing experienced declines in the likelihood of incarceration in adulthood. This may be through increased stability which allows individuals to receive the treatment they need for mental health, substance use, or physical health diagnoses that in turn reduce future criminal activity. Alternatively, housing supports may allow households to locate in safer neighborhoods, reducing exposure to neighborhood violence that can have negative short and long-term effects (Sharkey et al., X2).

Barriers to using the voucher

Eligible households selected for a voucher face several barriers to successfully using the voucher (Moore, 2016). The voucher must be used within a certain period (which is at least 60 days long), and in that time they must find a unit that meets size, quality, and cost requirements, and that has a landlord willing to accept the voucher (Ellen, 2018). In tight housing markets, four out of ten households that receive vouchers are unable to use them in the allotted time frame (Finkel and Buron, 2001). Further understanding the challenges voucher holders face – as well as the benefits they may (or may not) accrue from receiving the voucher – is critical to an analysis

of the efficacy of the program. Participants in the present study unfortunately used their vouchers at a very low rate.

Taken together, the effects of housing voucher receipt on ancillary services, such as mental health, emergency medical, and other aspects of the safety net, are ambiguous. The same is likely true for criminal justice system involvement. While a housing voucher is likely to stabilize precarious housing situations, the effects on service utilization can go in several directions. For some, housing stability will not reduce challenges in other domains, such as mental or physical health. When housing stability does improve other outcomes, it may lead to less or more service use. On the one hand, that stability might make addressing other needs easier. On the other hand, if the needs are less acute, people might decline to address them. Prior research is equally ambiguous about these effects, so we turn to the present study.

Policy Context

We estimate the impact of HCVs among low-income residents of Sonoma County, California, a mostly suburban and rural county north of San Francisco. Prior to June 2019, the Sonoma County Community Development Commission (CDC) maintained an HCV waitlist with over 26,000 applicant households that had an estimated wait time of 20 years for those at the end of the list. The households on the waitlist reported high needs: the median reported annual income was less than $12,000; 52 percent were families with minor children; 4 percent identified as homeless; and 31 percent were disabled. The average wait time for households on the waitlist was over 10 years and only 59 percent of households offered a voucher were able to use it within a year.[1] Prior to June 2019, applicants who resided in Sonoma County were given preference, but

[1] Analysis of the waitlist in June 2019 by the California Policy Lab in a November 2021 internal memo to the Sonoma County Community Development Commission.

this policy resulted in a non-representative pool of households receiving vouchers in the county. Specifically, fewer families of color were receiving vouchers than the share of those families on the waitlist or in the county. These factors raised concerns about the system from federal inspectors, causing Sonoma County to eliminate the existing waitlist and overhaul the system in spring 2019, shifting to a lottery-based system to improve the equity of the HCV offer process (Schmidt, 2019).[2]

In May 2019, households on the HCV waitlist received a letter of notification that the existing waitlist would close and any household wishing to be placed on the new waitlist would need to re-apply. In addition to sending letters to existing waitlist members, the Sonoma County CDC also paid for advertisements around the county, notified staff at many local agencies to alert clientele, and provided in-person application assistance at the Sonoma County Housing Authority. The online application tracked how a household learned of the new waitlist and application.

When the Sonoma County CDC opened the new HCV lottery waitlist, applications were collected through a simple online form and provided to a third-party agency. To generate the broadest applicant pool possible, there was no requirement to prove eligibility for the HCV program at the time of application. In September 2019, this agency randomly selected 500 households to receive vouchers from an applicant pool of over 12,500 (a third of whom had been on the original waitlist). Of those randomly selected to receive a voucher, 38 percent were families with minor children, 28 percent were homeless, and 14 percent were disabled seniors. While the selection of lottery winners was random, the county prioritized groups of selected

[2] In addition to the HCV Program, the Sonoma County Housing Authority operates several other, more targeted housing assistance programs, such as the Mainstream Voucher Program, the Family Unification Program, the Shelter Plus Care Program, and the Foster Youth to Independence Initiative.

households to receive their voucher offers first based on considerations including disability and elderly status.[3] Only 202 out of the 500 selected households were offered a voucher; the remaining households could not be reached (52%), were found ineligible (2.2%), or declined assistance (3.6%).[4] Of those 202 households, 95 ultimately used their voucher in Sonoma County. After all the cases of the eligible households selected in September 2019 were resolved, the county opened a new application in 2021, generated a new waitlist, and selected another random group of households for voucher receipt. This study focuses on the 2019 lottery.

The COVID-19 pandemic altered the process of voucher distribution, as the County shifted to virtual operation. Instead of distributing the vouchers over the course of the following year, it took nearly twice as long for vouchers to become available for distribution. As a result, the treatment group was selected and informed over a much longer period than anticipated. Once households received a voucher, the pandemic created an even more challenging environment in which to find an available and eligible unit. Eviction moratoria and public health concerns caused more people to stay in their homes (Fry, et al., 2021), and the lack of turnover meant voucher-holders had limited options. Because of these challenges, the County offered voucher winners an open-ended extension to secure housing during the pandemic (typically there is a 120-day limit). Despite this, the rate of voucher use once offered (47%) was lower in Sonoma County's 2019 lottery than national estimates (60%) (Ellen, 2020). The HCV program in Sonoma County is only serving a fraction of those who indicate housing need: in this study, only

[3] There are other types of preference provided for HCVs between lotteries. Once all of the eligible lottery winners are offered a voucher, Sonoma County allocates a portion of its turn-over Housing Choice Vouchers to individuals who are homeless, formerly homeless households that have successfully participated in Permanent Supportive Housing program or Rapid Rehousing Program within Sonoma County, persons exiting incarceration who are actively engaged in supportive services and have a high potential of becoming homeless, and households experiencing chronic homelessness.

[4] The remaining 2.2% of applicants were deceased, housed, reached on another housing support list, had their waitlist offer withdrawn, or had a voucher expire.

3.9% of all applicants were selected for the voucher waitlist, 1.6% were ultimately offered a voucher, and 0.74% successfully leased a unit with the voucher.

Data

This study uses the Policy Evaluation and Research Linkage Initiative (PERLI) Sonoma Life Course dataset, which spans from July 2013 to March 2022. This dataset integrates anonymized longitudinal data from several systems across Sonoma County, California, facilitating a comprehensive understanding of an individual's outcomes through their touchpoints with several systems. These system interactions provide data on behavioral health and substance use disorder service utilization, enrollments in social safety net programs, use of housing services including Housing Choice voucher participation and stays in homeless shelters, and interactions with the criminal justice system, including sentences, probation, bookings, and convictions. The data were linked by Sonoma County's Information Systems Department before being de-identified and shared with the research team.[5]

The Sonoma County CDC Housing Choice Voucher application data provides baseline information on 12,671 adults who applied for a voucher in July 2019. This file includes demographics, application status and date, lottery status, and housing need characteristics including elderly, disabled, and single. The application form does not include identifying information about other members of the applicant's household. All demographic information used in the analysis are self-reported from the HCV application form.

[5] Sonoma County's Information Systems Department, working with the California Policy Lab, developed a flexible rules-based approach written in SQL to merge these datasets iteratively, creating a master index that uniquely identifies all individuals in any of the data and captures the different identifiers used for an individual across systems when they are in multiple systems. The fields used for these linkages are date of birth, name, and Social Security Number (SSN). This dataset also specifies how a record from a given dataset matched to other records (e.g., an exact match on last name and SSN). All identifiers were removed from the data before being provided to the research team.

To conduct our analysis, the housing voucher waitlist was linked at the individual level to the data from the other systems using a common anonymized identifier. All outcomes are measured in the linked Sonoma County data, therefore service utilization and service contact can only be observed for individuals who interact with systems within Sonoma County, even if they reside in a different county.

We assess outcomes in the months following lottery selection through the end of each respective dataset. We assess both whether individuals accessed services or established system contacts and the intensity of service use or system contact. These measures provide distinct yet crucial insights into patterns of service utilization, offering a nuanced understanding of individuals' interactions with various support systems. For both, we measured the outcomes in the period after the lottery selection (October 2019 - end of data) and after one year of the lottery selection (October 2020 - end of data). Below is a description of each data system and the outcomes we construct.

Safety net data

Safety net service utilization data are from the Sonoma County Human Services Department's CalWIN dataset (July 2013 to March 2022). This dataset contains person-program level information on monthly enrollments in safety net services such as SNAP (CalFresh in California), TANF (CalWORKs in California), and Medicaid (Medi-Cal in California). We construct the following outcomes: for access to services, we measured if the applicant ever received any safety net service by observing their presence in the data during the follow-up period. Additionally, we measure if the individual used specific benefits such as TANF, SNAP, or Medicaid in the period following the lottery. For intensity, we measured the total number of services an individual received after the lottery.

Mental health service data

Mental health service data is obtained from the Sonoma County Department of Health Services' AVATAR data system at the person-service level, with service utilization observed between July 2013 and June 2021. This file contains information about the admission type, diagnosis and severity, episode number, service types, mode of service, service duration, location, cost, and date. Our primary outcomes are use of any mental health service, and the total number of mental health services used. These services encompass over 100 unique offerings, including board and care, medication support, rehabilitation services, and targeted case management. These can be provided in various modalities, such as 24-hour services, day services, non-residential rehabilitation treatment, and outpatient services.

Substance use disorder data

For substance use disorder services, data is gathered from the Sonoma County Department of Health Services' SWITS system from July 2013 to June 2021. This person-service level file includes data on diagnoses including the use of alcohol, opioids, or cannabis, unique services received each month, total time and cost of the service, and whether the service was received in a residential setting or a criminal legal setting such as drug court or probation camp. It also includes information on the type of facility providing the treatment and the program type. The outcomes we construct are whether the individual ever received any substance use disorder service, the total number of substance use disorder services received, and the total number of days they received the services post-lottery.

Housing program data

Housing outcomes are observed using data from the Sonoma County CDC's Homeless Management Information Systems (HMIS) system from July 2013 to June 2021. This person-service level dataset contains data on program information including the name, start and end of service, and type of service (residential and housing support services). Outcomes are whether the person ever enrolled in a housing program or received a housing service, and the total number of enrollments in residential services. Residential services include emergency shelter, permanent housing, permanent supportive housing, rapid rehousing, and transitional housing, and non-residential housing support services include coordinated entry and other housing supports.

Criminal justice system data

The linked dataset includes a broad range of criminal legal systems managed by the Integrated Justice System (IJS) from the Sonoma County Probation Department, the Sonoma County District Attorney's Office, and the Sonoma County Sheriff's Office. This includes data on bookings, cases, and sentences, including jail and prison. The booking, case, and sentence data are from July 2013 to March 2022. The bookings file includes information on the booking and case number, booking date and release date, charge, attempt, and severity. The case data includes information such as charge, disposition, enhancement, filing date, and disposition date. For sentences, we have the time sentenced to prison, time sentenced to jail, whether the sentence was concurrent or consecutive, and credits for time served. The primary outcomes constructed are any case filed in the post-lottery period, any serious or violent felony case, any arrest that resulted in a conviction, and any jail booking. To measure the intensity of criminal legal system contact, we also measure the total number of jail bookings.

Research Design

The analysis answers three research questions. First, what is the impact of a voucher offer on receipt of safety net services (such as SNAP, TANF, and Medicaid), behavioral health services (such as substance use disorder and mental health services), and housing supports (such as permanent supportive housing, shelters, and rapid rehousing)? Second, what is the impact of a voucher offer on contact with the criminal justice system, including arrests, convictions, and jail bookings? Third, is there variation in the effect of a voucher on these outcomes by subgroups, including order priority status (seniors, disabled, or both), race and ethnicity, and sex?

To answer these research questions, we first estimate the intent-to-treat (ITT) effect of the voucher offer on the outcome measures. The model is specified in equation 1:

$$(1)\ y_i = \alpha + \beta_1(Treatment_i) + X\Gamma + \varepsilon_i$$

$Treatment_i$ is an indicator taking the value of one if individual *i* was selected for a voucher in the 2019 lottery. **X** is a vector of observable individual characteristics at the point of voucher application, including indicators for the groups given priority in the order of the voucher offers, race, ethnicity, and gender. In this model, y_i is the outcome of interest. To answer research question 1, separate models are estimated for the following outcomes (Y_i): safety net service use, substance use disorder services, mental health services, and housing services. To answer research question 2, Y_i will be arrested, convicted, and booked into jail following the voucher offer. These models estimate the intent-to-treat (ITT) effects of the voucher offer.

There are several reasons why a household randomly assigned to the waitlist may not use a voucher. First, eligibility for the HCV program was not determined prior to random selection. Therefore, there should be an equal share of households in the treatment and control groups that

are not actually eligible to receive a voucher. We can observe this information for the treatment group, but not for the control group. Further, once offered a voucher, households may struggle to find a unit that meets their needs. For instance, households with minor children may struggle to find a unit that is large enough to accommodate their family (based on HUD's rules), homeless individuals may not be able to find a landlord who is willing to rent to them, and disabled seniors may have trouble locating an accessible unit. The time-to-lease-up may be correlated with individual characteristics as well. Following Chyn et al. (2019), we estimate the probability of lease-up based on observable characteristics and use the predicted probability of lease-up to instrument for actual voucher use in a two-stage least squares model. Specifically, equation 2 is the first-stage estimate of the relationship between being selected in the lottery ($Treatment_i$) on the probability of leasing up. Then in the second stage (equation 3), the estimated lease-up probabilities are used to estimate the impact of the voucher on outcomes (Y_i).

$$(2)\ LeaseUp_i = \beta_0 + \beta_1(Treatment_i) + X\Gamma + \varepsilon_i$$

$$(3)\ y_i = \alpha_0 + \alpha_1(\widehat{LeaseUp_i}) + X\Gamma + \varepsilon_i$$

Since applicants are randomly selected to the waitlist, but are not offered vouchers in random order, we control for the characteristics associated with the order of the voucher offer. Among those households selected to receive a voucher, the Sonoma County CDC verifies eligibility and offers vouchers first to disabled seniors, and then individuals who are disabled or seniors. If it takes a long time for a voucher offer to be made, households may have already moved into a new unit on their own, or left the county, and may not respond to the offer. Further, we investigate variation in the effect of the voucher by subgroups, including those who are

seniors, disabled, or both at baseline, and by applicant demographic groups, including race and ethnicity.

Although our novel dataset linking individual contacts across multiple county systems provides insight into how voucher applicants fare across multiple service domains, the data are limited to contacts that occur in Sonoma County (and with Sonoma County service providers). Therefore, individuals who live outside of the county are much less likely to receive services that are observable in our dataset. As a robustness test of our main results, we limit the sample to individuals who live in Sonoma County at the time of the voucher application in 2019. These individuals are much more likely to appear in the administrative data both before and after the lottery if they are receiving county services.[6]

Finally, given the long average time-to-lease up for the treatment group, measuring outcomes starting at the point of random selection (2019) may conflate the period households are waiting for a voucher with the period following voucher use. As an additional robustness test, we measure all outcomes starting 12 months after the lottery date, to account for this delay in lease-up.[7]

Results

To verify that lottery winners were indeed selected randomly, and that the treatment and control groups are otherwise similar, we compare the baseline characteristics of those who were

[6] There are several ways that limiting our outcome measurement to Sonoma County systems can lead us to miss engagement with systems outside of the county. An individual could live in Sonoma County for all or part of the period, but access services outside of the county. An individual could live outside of Sonoma County for all or part of the period and be even more likely to access services outside of the county. We only know whether someone lived in Sonoma County at the time of voucher application, so we are unable to assess who lives in or outside of the county during the follow up period.

[7] We conduct this analysis for all outcomes but jail bookings, as our data for that measure do not extend beyond 12 months after the lottery date.

selected for a voucher in the lottery (treatment group), and those who were not (control group) (Table 1). Applicants in the two groups are similar in terms of demographics and service contacts in Sonoma County in the two years prior to the lottery. Across the treatment and control group, 41% of the applicants lived in Sonoma County. About three-quarters (72%) of the applicants are female. Nearly half (47%) of the applicants are White, about one-third (34%) are Black, and about one-fifth (19%) are Hispanic or Latino. The average income of applicants was about $21,500.[8]

[Table 1 here]

Over one fifth (22%) of applicants had utilized safety net services (e.g., SNAP, TANF) in the two years prior to the lottery. A smaller share had utilized other housing services (4%), substance use disorder services (4%), or mental health services (3%). The treatment and control groups had similar levels of contact with the criminal justice system prior to the lottery, which in our dataset includes jail bookings (6%), cases (5%), probation (4%), and sentences (3%). About 2% of the control group was homeless, in shelter, or in transitional housing prior to the lottery; the number of homeless individuals in the treatment group is too small to report (less than 10).

Over a quarter (28%) of the applicant pool is both senior and disabled; 19% are either senior or disabled; and 53% are neither senior nor disabled. The only statistically significant difference observed between the treatment and control groups is that the treatment group had more applicants who are senior and/or disabled than in the control group. While these applicants are given priority in the order that the vouchers are disbursed, we have no indication that senior or disabled households were given preference in the lottery itself. However, they are over-represented in the treatment group.

[8] Table 1 lists the treatment and control group characteristics separately. The numbers reported in this paragraph are for the full sample.

The lease-up rate for households selected in the lottery and offered a voucher was low (47%), and among those who eventually secured a lease, the time from lottery selection to lease-up was long. While studies have documented low lease-up rates for HCV participants nationally, the reported rate is generally higher than in Sonoma County. For example, Ellen, O'Regan, and Strochak (2024) analyze a sample of voucher recipients across 433 metropolitan housing authorities and find a median lease-up rate of 63% and a median search time of 57 days. Other studies have found lease-up rates that range from 61% to 82% (Chyn et al., 2019). The context for the current study is critical: households were selected for the lottery in September 2019, and many households were given voucher offers and conducting housing searches during the COVID-19 pandemic. The pandemic and ensuing stay-at-home orders and other policies implemented during this time (including removing the 120 day time limit for housing searches) likely affected the time to lease up observed in this study.

Nevertheless, the median number of days from application to lease-up for the treatment group households that were able to secure housing was 273.[9] Households in the treatment group were prioritized for vouchers first based on whether they included a disabled person, a senior, or both. As a result, the time to lease-up for order priority households was systematically lower than for non-priority households (Figure 1). For disabled and senior households, the median time to lease-up was 216 days, compared to 220 days for disabled OR senior households (about seven months), and 813 days for non-priority households (a little over two years). Within the order priority groups, there was significant variation in days to lease-up, ranging from 114 days to 938 for disabled and senior households.

[Figure 1 here]

[9] The date of lease-up is the date of the most recent status change on the case among cases that successfully lease-up.

Impact of the voucher on outcomes

Next, we discuss the primary results by policy domain, beginning with substance use and mental health services, safety net benefits, housing services, and then criminal justice system contact. For each domain, we discuss results from both the intent-to-treat (ITT) and treatment-on-the treated (TOT) models. The estimates presented in the tables for the TOT models are from the second stage regression models. Following the discussion of the results for the full sample, we discuss results for the subsample of individuals who were Sonoma County residents at the time of the voucher application, because they are more likely to receive services provided in Sonoma County than people who live in other counties. The models discussed below include controls for race, ethnicity, sex, and voucher order priority groups (disabled, senior, or both).

The offer of a housing choice voucher did not affect the probability of receiving substance use disorder services during the follow-up period or the number of substance use disorder services received by the treatment group relative to the control group (Table 2). Among those in the treatment group who were able to lease-up (TOT), we observe a decrease in the probability of receiving mental health services during the follow-up period and the number of mental health services received, compared to similar individuals in the control group. These differences in mental health service contact were statistically significant. The magnitude of these effects is small, but the control group means are very low: the decline in mental health services is 0.6 percentage points from a control group mean of 0.01, and the decline in the number of mental health service contacts is 0.72 from a control group mean of 0.10. The results for the subset of individuals who resided in Sonoma County at the time of application are consistent with the main findings, although the magnitude of the effects is larger (Appendix Table B1). Specifically,

the likelihood of receiving mental health services declines by 0.9 percentage points following the voucher offer, and the number of mental services declines by 0.95.

[Table 2 about here]

The housing choice voucher offer is not related to any statistically significant changes in engagement with safety net benefits during the follow-up period, overall and by safety net benefit program (Table 3). The coefficients on the estimates are consistently positive but none reach statistical significance beyond the 10 percent level. Approximately one quarter of the sample was enrolled in a safety net benefit program in the two years prior to randomization, and the results suggest that the voucher offer did not change rates of participation in these benefit programs differentially for the treatment versus the control group. The results are the same for the subsample who were Sonoma County residents at the time of application (Appendix Table B2).

[Table 3 here]

Although the housing choice voucher aims to provide stable and affordable housing for participants, we find little impact of the voucher offer on housing services or supports (Table 4). Specifically, we find no effect of the voucher offer on the probability that the treatment group receives any (non-voucher) housing or housing services during the follow-up period, relative to the control group, and no change in the number of enrollments in housing services. The results for the subsample of Sonoma residents are consistent with the main results (Appendix Table B3). This result may reflect different housing needs among the applicant population. Very few applicants were experiencing homelessness or residing in a shelter at the time of application (only 2% of the control group), and a small share had received housing services or support in the

two years prior to the application (4%). While applicants may struggle to afford housing, it appears that very few were unhoused or relying on the types of housing support provided by the county prior to their HCV application.

[Table 4 here]

The final policy domain we examine is contact with the criminal justice system. Overall, the housing choice voucher offer results in a marginally statistically significant change in the likelihood of a conviction in the follow-up period for the treatment group relative to the control group but does not change the likelihood or frequency of contact with the criminal justice system along the other measures (Table 5). The magnitude of the main conviction effect is small: a decline of one percentage point. There is no difference in the likelihood of having any new criminal court case in the follow-up period, of having a serious and violent felony case, or a jail booking. However, when we focus on the individuals in the treatment group that lease-up with a voucher, relative to similar individuals in the control group (the TOT model), we find a decrease in the likelihood of having any criminal case, a serious and violent felony case, and a conviction following the voucher offer.

[Table 5 here]

The criminal justice system contact results for the subset of individuals residing in Sonoma County at the time of application tell a somewhat different story, and the magnitude of the effects are larger. The ITT results show a significant decline in any criminal case (2.7 percentage points) and in a conviction (2.8 percentage points). These are decreases from control group means of 2.4% and 1.4%, respectively. The TOT results suggest that the voucher offer is related to declines in the likelihood of a criminal case, a serious and violent felony, or a conviction, for those who were able to lease-up relative to similar control group members

(Appendix Table B4). The magnitude of the effect on any criminal case is 8.4 percentage points, for a serious and violent felony case is 2.8 percentage points, and for conviction it is 8.7 percentage points. These are quantitatively meaningful effect sizes, given the low baseline levels of contact with the criminal justice system (only 4.6 percent of the sample had a new case in the two years prior to the lottery, and 5.7 percent were booked into jail during that time). There were no significant effects on the likelihood of or number of jail bookings. Given contact with the criminal justice system is unambiguously negative, unlike contact with substance use, mental health, housing and safety net services, this is a profoundly positive result. While there are minimal full-sample effects on criminal justice system contact, this appears related to the large number of non-Sonoma County residents in the treatment and control groups who are unlikely to show up in the County's legal system.

Variation in impact of voucher by subgroups

The population of individuals who apply for a voucher is diverse, as demonstrated in Table 1. It may be, then, that the impact of the voucher offer is different for applicants with varying characteristics. Prior research has demonstrated that lease-up rates and search times can vary by demographic group within the same housing market (Ellen et al., 2024), and that gender and race are significant predictors of lease-up (Chyn et al., 2019). Moreover, the legacy of housing discrimination and segregation means that even with housing vouchers, nonwhites are less likely to live in desirable neighborhoods and housing. In this section we examine the impacts of the voucher offer by racial and ethnic group, sex, and order priority status (specifically, senior and/or disabled). We presume there are other groups, such as those who are homeless at the point of application, who may have different outcomes than the average applicant, however this subgroup was too small to generate reliable impact estimates.

Race and ethnicity. When we split the samples by race and ethnicity, we observe several statistically significant declines in service and safety net provision and criminal justice system involvement. When we examine the impact of the voucher for people identifying as Hispanic, Black (non-Hispanic), or not Hispanic or Black, we find variation in substance use disorder and mental health service outcomes, as well as criminal justice system contact (Table 6). Specifically, we find larger declines in the number of substance use disorder services received for Hispanic individuals following the voucher offer (2.5 contacts) than for Black non-Hispanic individuals (0.55 contacts). Further, the voucher results in a decline in the likelihood that Black individuals receive SUD services overall (2.0 percentage points). For individuals who do not identify as Hispanic or Black, the voucher is associated with a marginally significant increase in the number of SUD services received (0.92 services). However, these individuals are also less likely to receive mental health services.

[Table 6 here]

While there are few differences in the results for safety net service enrollment across individuals by racial and ethnic group, we do observe an increase in the likelihood that Black individuals are enrolled in TANF following the voucher offer (0.6 percentage points). The coefficients on the impact of the voucher offer on TANF enrollment for individuals who are Hispanic or who are not Hispanic or Black are negative, and do not reach statistical significance.

We find the greatest divergence in results between people of different racial and ethnic groups for the criminal justice system outcomes. Recall, the likelihood of a conviction declined for the full sample following the voucher offer, and among the sample of Sonoma residents at the time of application, the likelihood of any criminal case also declined. When we analyze the results by race and ethnicity, we find that most of the declines in convictions following the

voucher offer are for individuals who are not Black or Hispanic. We find no difference in the likelihood of a jail booking or number of jail bookings between the racial and ethnic groups.

Sex. The majority of voucher applicants in the sample are female (72%), and we observe variation in the impacts of the voucher offer for females relative to males (Table 7). Specifically, females receive fewer substance use disorder services following the voucher offer relative to female control group members, while males receive more of these services. Both groups receive fewer mental health services after the voucher offer relative to control group members. The changes in safety net service receipt are greater for males: there is an increase in the number of safety net benefit enrollments and the likelihood of enrolling in SNAP. Men were also less likely to be enrolled in TANF following the voucher offer, with no change for women. A notable result from this subgroup analysis is that men are essentially the only group where voucher receipt leads to statistically significant *increases* in service use across multiple services.

[Table 7 here]

The effects of the voucher offer on criminal justice system contact are present for both males and females, though effects are generally larger for males. The voucher resulted in a lower likelihood of any criminal case for females, and a lower likelihood of a conviction for males. The TOT results suggest that the sample of females who received a voucher were 1.2 percentage points less likely to have a new serious or violent felony relative to similar control group members, and for males the effect was 4.0 percentage points. Similarly, the TOT effect on new convictions was a 3.8 percentage point decline for females, and a 11.8 percentage point decline for males. These results are perhaps unsurprising, given that men are far more likely to encounter the criminal justice system overall. However, it is notable that the voucher offer appears to decrease their level of criminal justice system contact relative to men in the control group.

Voucher order priority group status. Finally, we examine whether there are differences in outcomes by the groups given priority in the order vouchers were offered, specifically for senior versus younger applicants (Table 8). As described previously, vouchers were given out in order of priority group and those within the order priority groups had shorter wait times before leasing up. We find statistically significant declines in the receipt and number of mental health services among seniors following a voucher offer. The coefficients for non-seniors do not reach statistical significance, although they are also negative. Younger people are more likely to enroll in safety net benefits following a voucher offer: we observe increases in overall enrollment, the number of enrollments, and enrollment in Medicaid. For seniors, we find a decrease in the likelihood of enrollment in TANF following the voucher offer. Regarding housing services, seniors are less likely to receive housing support services as well.

Both senior and non-senior applicants experience declines in criminal legal system contact: both groups are less likely to have a serious and violent felony or a new conviction following the voucher offer (TOT models), and magnitude of the effects are similar.

[Table 8 here]

Robustness tests

Given the long wait times the sample experienced between random selection and lease up, the overall effects discussed up until this point are biased toward zero. To explore this possibility, we re-estimate our main models for the full sample, delaying the outcome measures by 12 months. In other words, we push the observation window 12 months after the lottery, rather than beginning when the lottery took place. If changes in outcomes are more likely to occur after lease-up (rather than after simply winning the lottery), these estimates should provide insight. However, the approach is rather blunt - there is great variation in the time to lease-up (as

demonstrated in Figure 1). Therefore, we consider these results a test of the robustness of the main, more conservative results.

In general, the lagged outcome models tell a consistent story to the overall results (Appendix C). The results for substance use and mental health service, safety net service, and housing service outcomes are very similar in sign and magnitude (Appendix Tables C1, C2, and C3). The results for contact with the criminal justice system reach statistical significance for two of the TOT models when we lag the outcome measures. Specifically, the voucher is associated with a decrease in a serious and violent felony case and a conviction in the lagged outcome models (Appendix Table C4).

Discussion & Policy Implications

Using random assignment, we evaluate whether housing voucher receipt affects the likelihood and frequency of substance use, mental health service and housing service access, safety net benefit provision, and criminal justice system involvement. In addition to random assignment, we have data on participants before and after the housing lotteries were conducted for several outcomes, so we can evaluate whether voucher receipt changes the likelihood or frequency of these outcomes. We find very little evidence that voucher receipt affects access to services or criminal justice system involvement, although we do find meaningful effects for some subgroups.

There are several explanations for the limited connections between housing voucher receipt and the outcomes we observe in this study. First, housing voucher receipt might lead some people to access more of these services, while it might lead others to access fewer. For someone with a substance use disorder who is precariously housed, the housing voucher might stabilize that housing and alleviate some aspects of their disorder. For another individual with

such a disorder, the stabilized housing situation might allow them to focus more on treating their disorder and lead them to access services to do so. Mental health service access is similarly ambiguous. Even safety net provision might have similarly ambiguous effects, as the housing voucher might make other subsidies less necessary for some but make accessing those benefits more of a priority once housing is taken care of.

Another potential reason for the attenuated effects might be due to implementation challenges. As with MTO, participants faced challenges leasing up, with the median time to lease up being 273 days. Given that the control group didn't lease up, there was no corresponding date for us to begin the clock for evaluating post-test outcomes. For that reason, both the treatment and control group clocks began when the lottery occurred. This meant that, for many in the treatment and control groups, some of the post-test time was actually pre-test time, which made it less likely to observe effects from using the voucher.

Further, a slight majority (53 percent) of our treatment group did not lease up at all. This meant that our intent-to-treat estimates were based on a treatment group that did not *use* their treatment just over half of the time. The treatment on treated estimates were rarely different, but involved a smaller sample in the treatment group, and was not fully random.

Finally, the COVID pandemic may have significantly impacted the likelihood that many people could or would access various services with or without a voucher. Previous research suggests that people received less mental and behavioral health services during the pandemic (Pagano et al., 2021; Lin et al., 2022) and crime rates dropped precipitously following shelter in place orders, reducing contact at all points of the criminal justice system (Bird et al., 2021; Hoeboer et al., 2024). Among our sample, contact with various systems was quite low before the study began, signaling this group was not likely to access services (or have criminal justice

system involvement) in great numbers over the course of the study. While California has a relatively generous safety net system that expanded due to emergency funds, COVID likely discouraged access to these services. COVID may have further suppressed peoples' ability or comfort with seeking care for substance use disorders or mental health challenges. COVID may have also played a role in the lengthy lease-up times and relatively low lease-up rates, as fewer people moved during the pandemic (Fry & Cohn, 2021), slowing the turnover of vouchers. While the results of this study are instructive, we may expect different results for vouchers distributed during a non-pandemic context.

Despite null overall results, the subgroup analyses show that the voucher offer was impactful for certain groups of people, and less so for other groups. In general, men who received voucher offers tended to benefit more than women: men were more likely to receive substance use disorder services, while the voucher offer led to lower service receipt for women. Men were also more likely to be connected to safety net benefits following a voucher offer than women. Finally, criminal justice system contact was lower for men who received a voucher offer, and for people who did not identify as Black or Hispanic.

Given these results, one policy implication is housing vouchers should be coupled with non-housing support services for applicants with specific needs. Men, who make up less than a quarter of the applicant sample, increased their substance use service uptake and enrollment in safety net benefits following the voucher offer. They also were less likely to have new criminal convictions. Targeting support services to applicant subgroups may support safety net program benefit enrollment, receipt of behavioral health services, desistance from criminal activity, and overall well-being for certain voucher recipients, expanding the impact of the voucher beyond housing stability.

The most straightforward policy implication from this study is that housing authorities need more tools and resources to make housing searches more successful for voucher recipients. The low utilization rate was affected by the COVID-19 pandemic but is still the most glaring negative outcome in the study. Voucher recipients need more housing units available, and more assistance connecting to existing housing opportunities. Source of income protections are often offered to prohibit landlords from discriminating against households using vouchers (Ellen et al 2023; Freeman 2012), but California has had these protections in place since the beginning of 2020, which covers essentially all the relevant period where recipients would be searching for housing. While it is likely that landlords across the state, and perhaps in Sonoma County specifically, are still discriminating against households using vouchers to pay rent, these protections did not produce strong utilization numbers among this group.

Acknowledgements

We gratefully acknowledge the dedicated staff from several departments and agencies that serve Sonoma County including the Community Development Commission, the Department of Health Services, the Human Services Department, the Information Services Department, the Sheriff's Office, the Public Defender's Office, the District Attorney's Office, the Probation Department, and the Integrated Justice Systems. The list of individual staff is truly too long to list, but we'd like to give special thanks to Martha Cheever, Tracy Becker, and Michelle Whitman for their subject matter expertise, Shawn Brice and Kevin Taurian for leading the data linkage used for this analysis, Carolyn Staats, Ken Tasseff, Margaret Holly, Adam Borovkoff, Nirmala Kumar, and the entire ACCESS team. This research was made possible through support from the Russell Sage Foundation. CPL is also grateful to the University of California Office of the President Multicampus Research Programs and Initiatives, M21PR3278, The James Irvine Foundation, and the Woven Foundation for their generous support. We thank Alissa Skog and Erika Brown for their advice and assistance in this analysis. All opinions and errors should be attributed entirely to the authors.

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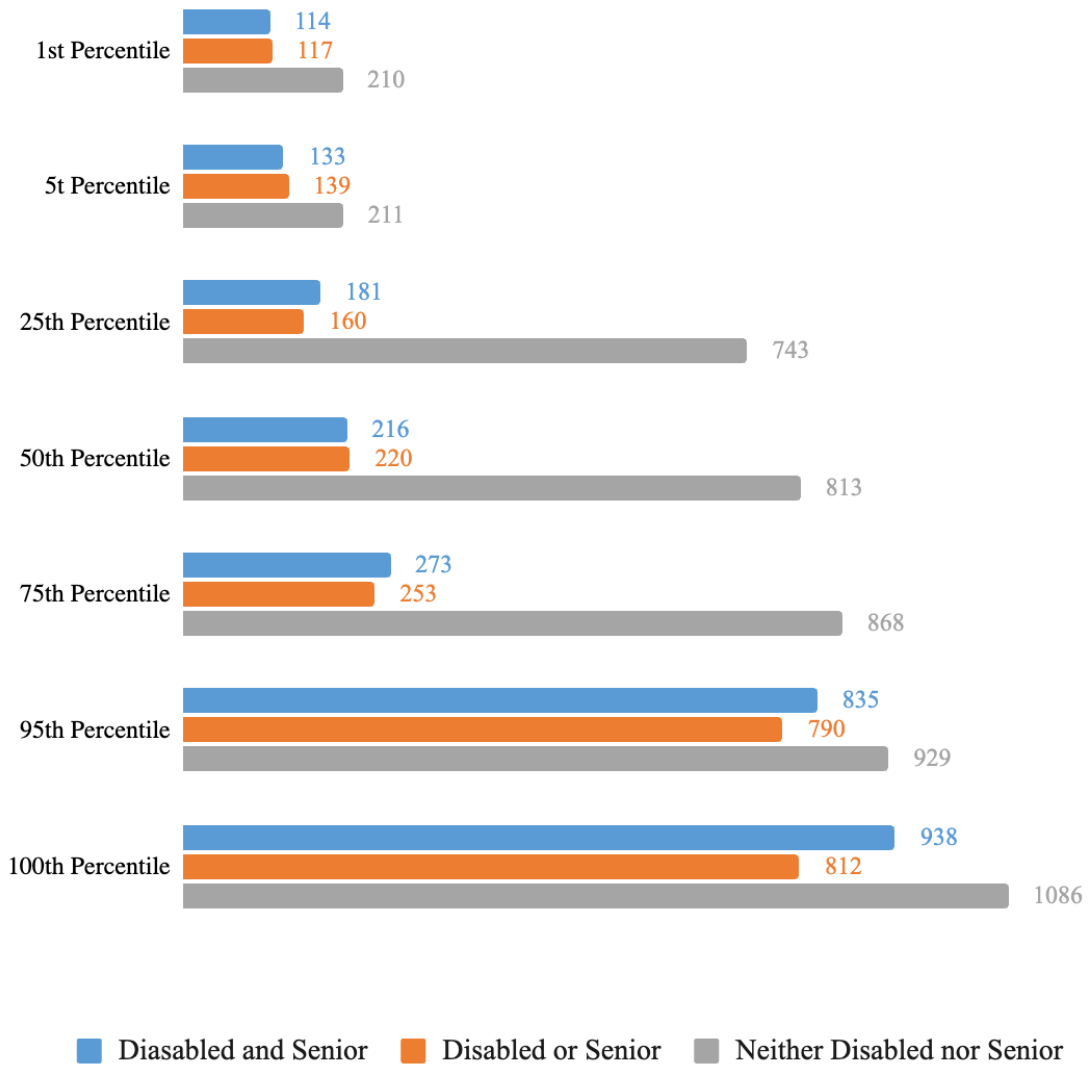
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Tables and Figures

Figure 1. Days to lease-up for treatment group, by order priority status



Note. The figure reflects the average time to lease-up for all treatment group members who successfully secured a lease (n=95).

Table 1. Descriptive statistics at baseline

	Control		Treatment		
Characteristics	N	Percent	N	Percent	P-value
Observations	12,183		488		
Applicant Demographics					
Lives in Sonoma County	4,954	0.41	209	0.43	0.3418
Applicant Sex Female	8,758	0.72	356	0.73	0.861
Applicant Race					
White	5,706	0.47	251	0.51	
Black	4,123	0.34	159	0.33	
American Indian	387	0.03	15	0.03	0.359
Asian	451	0.04	15	0.03	
Pacific Islander	192	0.02	-	-	
Missing	1,324	0.11	42	0.09	
Applicant Ethnicity Hispanic/Latino	2,332	0.20	87	0.19	0.8264
Gross Annual Income (mean)	$21,598		$18,439		0.2630
Gross Annual Income (SD)	$61,975		$13,229		
Applicant Order Priority Groups					
Senior & disabled	3,397	0.28	154	0.32	
Senior or disabled but not both	2,340	0.19	106	0.22	0.028*
Not senior and not disabled	6,446	0.53	228	0.47	
Homeless, in shelter, or transitional housing	238	0.02	-	-	0.6303
Service Contacts in Sonoma in Prior 2 years					
Safety net service contact	2,662	0.22	119	0.24	0.4156
Housing service contact	534	0.04	26	0.05	0.5237
Cases	560	0.05	20	0.04	0.9552
Jail booking	700	0.06	28	0.06	0.8696
Substance use disorder service contact	505	0.04	24	0.05	0.7587
Mental health service contact	374	0.03	15	0.03	0.2725
Voucher offer and lease up					
Offered a voucher			202		
Secured a lease with the voucher			95		
Lease-up rate				0.47	

Notes. Cell sizes of 10 or fewer have been suppressed. SD = standard deviation. P-values for difference in mean tests are reported in the last column. *p<0.05. Information on service contacts reflect services provided in Sonoma County by one of our agency partners. Individuals living outside Sonoma County may have received similar services elsewhere. The Sonoma County Housing Authority has established the following local preferences for applicants with household members in the following groups: Persons with disabilities; Seniors (62+ years of age).

Table 2. Impact of HCV offer on substance use and mental health outcomes

	Received SUD services		Number of SUD services		Days of SUD services		Received mental health services		Number of mental health services	
VARIABLES	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT
Voucher offer	-0.007	-0.035	0.251	1.318	0.407	2.140	-0.001	-0.006***	-0.138	-0.724**
	(0.007)	(0.031)	(0.280)	(2.345)	(0.513)	(3.038)	(0.001)	(0.002)	(0.246)	(0.307)
Constant	0.037***	0.037***	0.787***	0.784***	0.860***	0.856***	0.003***	0.003***	0.420***	0.422**
	(0.003)	(0.004)	(0.126)	(0.149)	(0.232)	(0.331)	(0.001)	(0.001)	(0.111)	(0.190)
Observations	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671
R-squared	0.014	0.014	0.004	0.004	0.001	0.001	0.003	0.003	0.002	0.002
Control means	0.022		0.515		0.496		0.001		0.121	

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher order priority groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.

Table 3. Impact of HCV offer on safety net service outcomes

	Enrolled in safety net services		Number of safety net program enrollments		Enrolled in Medicaid		Enrolled in SNAP		Enrolled in TANF	
VARIABLES	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT
Voucher offer	0.023	0.123	0.101	0.529	0.023	0.123	0.024	0.125	-0.001	-0.006
	(0.017)	(0.093)	(0.065)	(0.419)	(0.017)	(0.092)	(0.015)	(0.082)	(0.005)	(0.024)
Constant	0.255***	0.254***	0.596***	0.595***	0.249***	0.248***	0.158***	0.158***	0.012***	0.012***
	(0.008)	(0.009)	(0.030)	(0.035)	(0.008)	(0.009)	(0.007)	(0.007)	(0.002)	(0.002)
Observations	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671
R-squared	0.107	0.108	0.044	0.046	0.106	0.107	0.063	0.064	0.009	0.009
Control means	.190		0.443		.186		.122		.122	

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher order priority groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.

Table 4. Impact of HCV offer on housing services

	Received any residential housing or housing support services		Number of enrollments in housing support services	
VARIABLES	ITT	TOT	ITT	TOT
Voucher offer	0.011	0.055	0.027	0.141
	(0.009)	(0.051)	(0.038)	(0.260)
Constant	0.059***	0.059***	0.228***	0.228***
	(0.004)	(0.005)	(0.017)	(0.023)
Observations	12,671	12,671	12,671	12,671
R-squared	0.026	0.027	0.018	0.019
Control means	0.037		0.127	

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher order priority groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.

Table 5. Impact of HCV offer on criminal justice system contact

	Any case		Any serious and violent felony		Conviction		Booked in jail		Number of jail bookings	
VARIABLES	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT
Voucher offer	-0.010	-0.051*	-0.004	-0.020***	-0.010*	-0.054***	-0.003	-0.014	-0.059	-0.309
	(0.007)	(0.030)	(0.003)	(0.004)	(0.005)	(0.017)	(0.007)	(0.038)	(0.114)	(0.577)
Constant	0.027***	0.028***	0.004***	0.004***	0.017***	0.017***	0.028***	0.028***	0.362***	0.363***
	(0.003)	(0.003)	(0.001)	(0.001)	(0.002)	(0.003)	(0.003)	(0.004)	(0.052)	(0.054)
Observations	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671
R-squared	0.006	0.006	0.001	0.001	0.003	0.003	0.005	0.005	0.005	0.005
Control means	0.024		0.004		0.014		0.027		0.281	

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher order priority groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.

Table 6. Subgroups: Race and ethnicity

		Hispanic		Black (non-Hispanic)		Not Hispanic or Black	
Variable	Model	Voucher offer	SE	Voucher offer	SE	Voucher offer	SE
SUD and mental health services							
Received SUD services	ITT	0.002	(0.015)	-0.003	(0.004)	-0.007	(0.012)
	TOT	0.009	(0.088)	-0.020***	(0.008)	-0.029	(0.048)
Number of SUD services	ITT	-0.467	(0.623)	-0.078	(0.265)	0.921*	(0.525)
	TOT	-2.531***	(0.971)	-0.548*	(0.326)	-	-
Days of SUD services	ITT	-0.234	(1.096)	-0.076	(0.251)	1.120	(1.050)
	TOT	-1.268	(1.352)	-0.534	(0.342)	-	-
Received mental health services	ITT	-	-	0.000	(0.001)	-0.002	(0.003)
	TOT	-	-	0.000	(0.000)	-0.010***	(0.003)
Number of mental health services	ITT	-	-	0.001	(0.022)	-0.264	(0.556)
	TOT	-	-	0.005	(0.006)	-1.157**	(0.533)
Safety net services							
Enrolled in safety net benefits	ITT	-0.057	(0.049)	0.015	(0.013)	0.044	(0.030)
	TOT	-	-	0.107	(0.115)	0.192	(0.136)
Safety net benefit enrollments	ITT	0.140	(0.181)	0.067*	(0.039)	0.069	(0.121)
	TOT	0.757	(1.805)	0.472	(0.577)	0.301	(0.425)
Enrolled in Medicaid	ITT	-0.049	(0.048)	0.009	(0.013)	0.045	(0.030)
	TOT	-0.267	(0.260)	0.063	(0.106)	0.196	(0.136)
Enrolled in SNAP	ITT	-0.066	(0.042)	0.017	(0.011)	0.046*	(0.026)
	TOT	-	-	0.117	(0.105)	0.200	(0.122)
Enrolled in TANF	ITT	-0.010	(0.016)	0.006**	(0.003)	-0.001	(0.008)
	TOT	-	-	0.042	(0.047)	-0.006	(0.034)
Housing services							
Received housing or housing	ITT	0.001	(0.019)	-0.002	(0.008)	0.025	(0.016)
services	TOT	0.008	(0.108)	-0.014	(0.048)	0.111	(0.079)
Enrollments in housing services	ITT	-0.046	(0.086)	-0.017	(0.033)	0.110	(0.068)
	TOT	-0.247	(0.334)	-0.122	(0.113)	0.479	(0.455)
criminal justice system contact							
Any case	ITT	-0.015	(0.017)	0.007	(0.007)	-0.018	(0.012)
	TOT	-0.079	(0.061)	0.046	(0.065)	-0.080**	(0.037)
Any serious and violent felony	ITT	-0.003	(0.006)	-0.001	(0.003)	-0.005	(0.005)
	TOT	-0.018**	(0.008)	-0.008*	(0.004)	-0.023***	(0.005)
Conviction	ITT	-0.005	(0.014)	0.003	(0.005)	-0.019**	(0.009)
	TOT	-0.026	(0.059)	0.022	(0.048)	-0.084***	(0.014)
Booked in jail	ITT	0.015	(0.019)	0.006	(0.007)	-0.013	(0.013)
	TOT	0.083	(0.122)	0.043	(0.068)	-0.057	(0.045)
Number of jail bookings	ITT	-0.021	(0.237)	0.010	(0.085)	-0.035	(0.193)
	TOT	-0.112	(1.152)	0.070	(0.433)	-0.151	(0.952)
Observations		2,419		4,079		5,285	

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. ITT= Intent to treat. TOT= Treatment on the treated. SE= Standard error. - Indicates model was unable to run due to insufficient variation in outcome among subgroup members.

Table 7. Subgroup: Sex

		Female		Male	
Variable	Model	Voucher offer	SE	Voucher offer	SE
SUD and mental health services					
Received SUD services	ITT	-0.012*	(0.007)	0.009	(0.016)
	TOT	-0.066**	(0.028)	0.040	(0.078)
Number of SUD services	ITT	-0.374	(0.298)	1.987***	(0.644)
	TOT	-2.054***	(0.676)	-	-
Days of SUD services	ITT	-0.344	(0.634)	2.451***	(0.850)
	TOT	-1.888	(1.445)	-	-
Received mental health services	ITT	-0.001	(0.001)	-0.002	(0.004)
	TOT	-0.005**	(0.002)	-0.009**	(0.004)
Number of mental health services	ITT	-0.058	(0.184)	-0.334	(0.774)
	TOT	-0.320	(0.252)	-1.528*	(0.804)
Safety net services					
Enrolled in safety net benefits	ITT	0.018	(0.020)	0.041	(0.035)
	TOT	0.101	(0.111)	0.186	(0.164)
Number of safety net benefit enrollments	ITT	0.018	(0.070)	0.345**	(0.153)
	TOT	0.099	(0.343)	1.577	(1.123)
Enrolled in Medicaid	ITT	0.020	(0.019)	0.037	(0.035)
	TOT	0.109	(0.111)	0.170	(0.160)
Enrolled in SNAP	ITT	0.012	(0.017)	0.064**	(0.030)
	TOT	0.067	(0.097)	0.292*	(0.156)
Enrolled in TANF	ITT	0.001	(0.006)	-0.008	(0.009)
	TOT	0.008	(0.035)	-0.038***	(0.010)
Housing services					
Received any housing or housing services	ITT	0.008	(0.009)	0.023	(0.021)
	TOT	0.044	(0.055)	0.105	(0.105)
Enrollments in housing services	ITT	-0.001	(0.001)	-0.001	(0.003)
	TOT	-0.004**	(0.002)	-0.004	(0.003)
Criminal justice system contact					
Any case	ITT	-0.011*	(0.006)	-0.012	(0.019)
	TOT	-0.059**	(0.025)	-0.055	(0.073)
Any serious and violent felony	ITT	-0.002	(0.002)	-0.009	(0.008)
	TOT	-0.012***	(0.003)	-0.040***	(0.010)
Conviction	ITT	-0.007	(0.005)	-0.026*	(0.014)
	TOT	-0.038**	(0.018)	-0.118***	(0.024)
Booked in jail	ITT	-0.001	(0.007)	-0.010	(0.020)
	TOT	-0.007	(0.039)	-0.048	(0.079)
Number of jail bookings	ITT	-0.075	(0.086)	-0.136	(0.350)
	TOT	-0.410	(0.338)	-0.622	(1.610)
Observations		9,114		3,459	

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. ITT= Intent to treat. TOT= Treatment on the treated. SE= Standard error. - Indicates model was unable to run due to insufficient variation in outcome among subgroup members.

Table 8. Order priority category: Senior

		Priority: Senior		Priority: Not senior	
Variable	Model	Voucher offer	SE	Voucher offer	SE
SUD and mental health services					
	ITT	-0.015	(0.013)	-0.003	(0.008)
Received SUD services	TOT	-0.063	(0.040)	-0.016	(0.047)
	ITT	-0.259	(0.469)	0.546	(0.349)
Number of SUD services	TOT	-1.099	(1.563)	3.389	(4.307)
	ITT	0.117	(0.771)	0.544	(0.678)
Days of SUD services	TOT	0.497	(2.323)	3.373	(5.461)
	ITT	-0.002	(0.004)	-0.000	(0.001)
Received mental health services	TOT	-0.010***	(0.003)	-0.002	(0.002)
	ITT	-0.309	(0.661)	-0.003	(0.012)
Number of mental health services	TOT	-1.308**	(0.576)	-0.019	(0.018)
Safety net services					
	ITT	-0.005	(0.029)	0.036*	(0.021)
Enrolled in safety net benefits	TOT	-0.022	(0.123)	0.222	(0.140)
	ITT	-0.001	(0.107)	0.152*	(0.082)
Number of safety net benefit enrollments	TOT	-0.004	(0.412)	0.942	(0.715)
	ITT	-0.010	(0.029)	0.039*	(0.021)
Enrolled in Medicaid	TOT	-0.042	(0.121)	0.240*	(0.141)
	ITT	0.015	(0.025)	0.027	(0.018)
Enrolled in SNAP	TOT	0.063	(0.107)	0.165	(0.124)
	ITT	-0.009	(0.007)	0.003	(0.007)
Enrolled in TANF	TOT	-0.038***	(0.008)	0.019	(0.046)
Housing services					
	ITT	0.021	(0.017)	0.003	(0.010)
Received housing or housing services	TOT	0.089	(0.079)	0.016	(0.064)
	ITT	-0.028	(0.081)	0.057	(0.037)
Enrollments in housing services	TOT	-0.120	(0.297)	0.354	(0.416)
Criminal justice system contact					
Any case	ITT	-0.009	(0.013)	-0.012	(0.008)
	TOT	-0.038	(0.045)	-0.073*	(0.041)
Any serious and violent felony	ITT	-0.005	(0.005)	-0.004	(0.003)
	TOT	-0.020***	(0.005)	-0.022***	(0.006)
Conviction	ITT	-0.012	(0.010)	-0.010	(0.006)
	TOT	-0.053**	(0.023)	-0.061**	(0.025)
Booked in jail	ITT	-0.007	(0.013)	-0.002	(0.009)
	TOT	-0.029	(0.049)	-0.010	(0.057)
Number of jail bookings	ITT	-0.027	(0.236)	-0.095	(0.116)
	TOT	-0.115	(1.076)	-0.587	(0.491)
Observations		4,501		8,170	

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. ITT= Intent to treat. TOT= Treatment on the treated. SE= Standard error.

Appendix

Table A1. Outcome measures

Primary outcomes	Exploratory outcomes
Any social safety net service (Enrolled in SNAP, TANF, or Medicaid)	SNAP (food stamps) TANF (cash welfare) Medicaid (health coverage for low-income individuals) Number of safety net service enrollments
Substance use disorder (SUD) services (Received any SUD service)	Number of SUD services Days of SUD services
Mental health services (Received mental health services)	Number of mental health services
Housing services (Received any residential housing or housing support services)	Number of housing services
Arrests (Any arrests)	Serious and violent felony arrest Conviction Booked in jail Number of jail bookings

Appendix A. Alternative estimation strategy

Following Jacob and Ludwig (2012), we also estimated quarterly models of the impact of the voucher offer on outcomes. The models were specified in equation A1:

$$\text{(A1) } yit = \alpha + \beta 1(PostOfferit) + \beta 2(PreOfferit) + X\Gamma + \gamma t + \varepsilon it$$

$PostOffer_{it}$ is an indicator taking the value of one if individual *i* was offered an HCV in the 2019 lottery. $PreOffer_{it}$ is an indicator taking the value of one for individual *i* in all the quarters *t* following the lottery, but prior to their receipt of the HCV. **X** is a vector of observable individual characteristics at the point of voucher application, including priority group status, income, household structure, race, ethnicity, age, gender, and housing status. We include year-quarter fixed effects, to control for changes in housing and labor markets over the period. In this model, y_{it} is the outcome of interest. Separate models were estimated for the following outcomes (Y_{it}): safety net service use, substance use disorder services, mental health services, and arrests and convictions following the voucher offer. These models provided the intent-to-treat (ITT) effects of the voucher offer.

Quarterly models are most appropriate for outcomes that are observed with regular frequency at the quarter level. Given the low frequency with which we observe individuals in the sample coming into contact with the services (e.g. arrests, safety net program enrollments), measuring the effect of the voucher offer on quarterly changes in these outcomes was not appropriate.

Appendix B. Sonoma resident sample

Appendix Table B1. Impact of HCV offer on substance use and mental health outcomes for Sonoma residents

	Sonoma Residents at Time of Application									
	Received SUD services		Number of SUD services		Days of SUD services		Received mental health services		Number of mental health services	
VARIABLES	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT
Voucher offer	-0.014	-0.042	0.596	1.832	0.923	2.838	-0.003	-0.009***	-0.311	-0.955**
	(0.015)	(0.042)	(0.656)	(3.163)	(1.218)	(4.103)	(0.004)	(0.003)	(0.590)	(0.409)
Constant	0.059***	0.059***	1.218***	1.217***	1.348***	1.346**	0.005***	0.005***	0.736***	0.736**
	(0.006)	(0.007)	(0.265)	(0.272)	(0.493)	(0.611)	(0.001)	(0.002)	(0.239)	(0.338)
Observations	5,163	5,163	5,163	5,163	5,163	5,163	5,163	5,163	5,163	5,163
R-squared	0.006	0.006	0.002	0.001	0.002	0.001	0.004	0.004	0.003	0.003

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher order priority groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.

Appendix Table B2. Impact of HCV offer on safety net service outcomes for Sonoma residents

	Sonoma Residents at Time of Application									
	Enrolled in safety net services		Number of safety net service enrollments		Enrolled in Medicaid		Enrolled in SNAP		Enrolled in TANF	
VARIABLES	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT
Voucher offer	0.046	0.141	0.221	0.681	0.045	0.140	0.052	0.159	-0.002	-0.007
	(0.035)	(0.108)	(0.147)	(0.549)	(0.035)	(0.107)	(0.032)	(0.103)	(0.011)	(0.033)
Constant	0.405***	0.405***	0.945***	0.945***	0.395***	0.395***	0.251***	0.251***	0.019***	0.019***
	(0.014)	(0.014)	(0.060)	(0.061)	(0.014)	(0.014)	(0.013)	(0.012)	(0.005)	(0.004)
Observations	5,163	5,163	5,163	5,163	5,163	5,163	5,163	5,163	5,163	5,163
R-squared	0.022	0.021	0.010	0.011	0.023	0.022	0.013	0.013	0.009	0.009

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher priority groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.

Appendix Table B3. Impact of HCV offer on housing services for Sonoma residents

	Sonoma Residents at Time of Application			
	Received any residential housing or housing support services		Number of enrollments in housing support services	
VARIABLES	ITT	TOT	ITT	TOT
Voucher offer	0.021	0.065	0.071	0.218
	(0.020)	(0.066)	(0.086)	(0.350)
Constant	0.098***	0.098***	0.391***	0.391***
	(0.008)	(0.009)	(0.035)	(0.043)
Observations	5,163	5,163	5,163	5,163
R-squared	0.016	0.018	0.014	0.015

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher preference groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.

Appendix Table B4. Impact of HCV offer on criminal justice system outcomes for Sonoma residents

	Sonoma Residents at Time of Application									
	Any case		Any serious and violent felony		Conviction		Booked in jail		Number of jail bookings	
VARIABLES	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT
Voucher offer	-0.027*	-0.084**	-0.009	-0.028***	-0.028**	-0.087***	-0.010	-0.032	-0.222	-0.681
	(0.016)	(0.038)	(0.006)	(0.005)	(0.012)	(0.019)	(0.017)	(0.049)	(0.264)	(0.735)
Constant	0.043***	0.043***	0.007**	0.007***	0.025***	0.025***	0.043***	0.043***	0.575***	0.576***
	(0.006)	(0.006)	(0.003)	(0.002)	(0.005)	(0.005)	(0.007)	(0.006)	(0.107)	(0.096)
Observations	5,163	5,163	5,163	5,163	5,163	5,163	5,163	5,163	5,163	5,163
R-squared	0.019	0.017	0.006	0.005	0.011	0.008	0.022	0.021	0.018	0.018

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher priority groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.

Appendix C. Outcomes measured 12 months from random assignment

Appendix Table C1. Impact of HCV offer on substance use and mental health outcomes

	Outcomes measured 12 months after date of random assignment									
	Received SUD services		Number of SUD services		Days of SUD services		Received mental health services		Number of mental health services	
VARIABLES	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT
Voucher offer	-0.003	-0.015	0.154	0.808	0.252	1.325	0.020**	0.103	-0.001	-0.003**
	(0.005)	(0.024)	(0.127)	(0.906)	(0.222)	(1.421)	(0.010)	(0.090)	(0.001)	(0.001)
Constant	0.020***	0.020***	0.192***	0.190***	0.316***	0.314**	0.017***	0.017***	0.003***	0.003***
	(0.002)	(0.003)	(0.057)	(0.062)	(0.101)	(0.138)	(0.004)	(0.005)	(0.001)	(0.001)
Observations	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671
R-squared	0.033	0.033	0.014	0.013	0.002	0.001	0.003	0.001	0.019	0.019

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher order priority groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.

Appendix Table C2. Impact of HCV offer on safety net service outcomes

	Outcomes measured 12 months after date of random assignment									
	Enrolled in safety net services		Number of safety net service enrollments		Enrolled in Medicaid		Enrolled in SNAP		Enrolled in TANF	
VARIABLES	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT
Voucher offer	0.023	0.121	0.054	0.282	0.023	0.123	0.017	0.087	0.003	0.015
	(0.015)	(0.082)	(0.045)	(0.236)	(0.015)	(0.082)	(0.013)	(0.071)	(0.004)	(0.024)
Constant	0.162***	0.162***	0.316***	0.316***	0.160***	0.159***	0.105***	0.105***	0.007***	0.007***
	(0.007)	(0.007)	(0.020)	(0.022)	(0.007)	(0.007)	(0.006)	(0.006)	(0.002)	(0.002)
Observations	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671
R-squared	0.079	0.079	0.040	0.041	0.078	0.078	0.057	0.057	0.007	0.007

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher priority groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.

Appendix Table C3. Impact of HCV offer on housing services

	Outcomes measured 12 months after date of random assignment			
	Received any residential housing or housing support services		Number of enrollments in housing support services	
VARIABLES	ITT	TOT	ITT	TOT
Voucher offer	0.003	0.017	0.007	0.037
	(0.006)	(0.035)	(0.016)	(0.088)
Constant	0.035***	0.035***	0.073***	0.073***
	(0.003)	(0.004)	(0.007)	(0.010)
Observations	12,671	12,671	12,671	12,671
R-squared	0.026	0.027	0.021	0.021

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher order priority groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.

Appendix Table C4. Impact of HCV offer on criminal justice system outcomes

	Outcomes measured 12 months after date of random assignment									
	Any case		Any serious and violent felony		Conviction		Booked in jail		Number of jail bookings	
VARIABLES	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT	ITT	TOT
Voucher offer	-0.001	-0.007	-0.002	-0.010***	-0.004	-0.019*	-0.000	-0.001	0.038	0.198
	(0.005)	(0.024)	(0.002)	(0.002)	(0.003)	(0.011)	(0.005)	(0.027)	(0.059)	(0.378)
Constant	0.013***	0.013***	0.003***	0.003***	0.007***	0.007***	0.015***	0.015***	0.134***	0.134***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.027)	(0.027)
Observations	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671	12,671
R-squared	0.011	0.011	0.004	0.003	0.005	0.005	0.010	0.010	0.007	0.007

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models include controls for race, ethnicity, sex, and voucher order priority groups (elderly and/or disabled). TOT results are from the second stage regression of probability of lease up on outcomes.